*INDIVIDUAL HOUSING CHOICES
AMONG AIR FORCE MEMBERS*

THESIS

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AFIT/GEE/ENV/99M-10

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Air University

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In Partial Fulfillment of the Requirements for the

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Michael J. Johnson

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Abstract

Air Force members have three different housing choices: live in MFH, rent in the local community, or buy a house in the local community. A set of six constructs (Housing Attributes, Safety, Pet Importance, Location, Military Housing Perception, and Community) that encompass members' considerations is developed and analyzed. The data was extracted from a survey that was specifically design to illicit the relative importance of each construct during the housing decision making process. Each construct was measured using a Likert scale score. Statistical analysis was performed to determine the overall Likert mean score for each construct. Using the Likert mean scores from each construct, a regression analysis was performed to determine a predictive model for Air Force member's housing choice (actual housing choice, or preferred housing choice). Not all members are living in their preferred housing choice. Almost 50% of members living in MFH prefer to live in the local community. Knowing the importance that Air Force members place on each construct will aid the Air Force in the future design of MFH projects. The ability to predict members' choices will give the Air Force a forward looking approach to MFH by allowing them to respond to future needs base on the predictive model.

Individual Housing Choices
Among Air Force Members

I.   *Introduction*

Background

In the early days of the United States, housing for military members was not a
major item of concern, as there was no standing fighting force. The Colonial
Army was formed from the volunteers of local militias. Militias were comprised
of everyday citizens who would leave their family homes and join the Army to
aid in the defense of their country. In reality, they would leave their homes,
families and jobs, pick up their rifles and go to war. After the war was over, the
Army was dissolved until needed again. The soldiers would then return to the
lives they led before the war. This is how the defense of the United States of
America operated up through the Civil War. There was no need to house the
families of the fighting force because they already had homes to live in.

As the United States started its westward expansion, there was a small force of
Army personnel located in forts throughout the middle and western United
States. Many of these old forts are still in existence. Fort Leavenworth, Kansas
and Houston, Texas are examples of cities that grew from old Army posts. The

United States also kept a small Navy used predominately for coastal defense.
These forces comprised full-time professional soldiers and sailors, very few of
them married. Barracks were built on post for these men to live in since they had
no families of their own. Generally, only the commander or the senior enlisted
non-commissioned officer at each post or port may have had a family. The
following old Army saying reflects the lifestyle in the Army during the later
1800's through the early 1900's:

> Junior enlisted will not be married, Sergeants may be married, and
> senior non-commissioned officers (NCO) will be married.
> Lieutenants will not be married, Captains may be married, Majors
> and above will be married (Unknown).

With the need for a larger Army and Navy grew, so did the need to house
military families. Naval Base Pearl Harbor dates back to the 1860's when it was
established as a coaling station. Its importance was realized during the Spanish-
American war. Segments of Pearl Harbor family housing still in use date back to
the early 1900's (United States Navy 1998). Offutt AFB Grew out of an old Army
outpost, Fort Crook. Fort Crook was planned because Fort Omaha had no more
room to expand due to the growth of city of Omaha (Kibbe 1997). Fort
MacArthur was an old Army outpost located at the port of San Pedro California.
It served as a coastal artillery battery that guarded the harbor. It continued to
guard the harbor until the end of World War II. In the 1950s it became a missile
battery until the early 1970s. In September 1979, Fort MacArthur was transferred

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to the Air Force. Today it is used as a housing area for Air Force personnel at Los

Angeles (Los Angeles Air Force Base, 1998).

Cold War Housing Thrust

The United States military did not change much through the early 1930s. When a

fighting force was needed, it was formed. This formation process changed

drastically with the onset of the Cold War, which shifted the defense needs of the

nation like no other time in history. Now, there was a valid need for a large

standing peacetime force that had been unneeded or unheard of before (CBO,

1993). With this large standing force, men were not leaving their families and

jobs for just a few years then returning home; they were making the military a

profession. With the development of a large Cold War force came the need to

house not only the military members but also their families.

> After World War II, the peacetime Army was many times the size
> of the peacetime Army of the 1930s. The Cold War and the Korean
> Conflict ensured that the Army, even during the lean years of the
> Eisenhower administration, would be the largest peacetime Army
> in our nation's history. Although family housing had grown
> during the 1902s and 1930s, it was barely adequate for its day and
> was clearly inadequate for the expanded Army of the Cold War.
> The plight of inadequately, even scandalously, housed Army
> families finally made the pages of *Life* magazine in 1949, complete
> with photographs (Baldwin, 1998).

The housing for these personnel was not adequate to meet their needs. The

government decided that it was their responsibility to provide the housing

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needed for military members and their families. Senator Kenneth S. Wherry sponsored a bill, signed into Law on 8 August 1949. The bill allowed private companies to lease land from the government in order to build and maintain housing for military personnel. Army personnel could rent these home for the price of their housing allowance. Senator Homer Capehart sponsored a second housing bill in 1955, signed into Law on 11 August 1955. Under this program, private contractors constructed the housing but did not manage or maintain it. The house was transferred to the Department of Defense (DOD) for operation and maintenance after the construction was completed. The DOD bought out the owners of the Wherry housing units due to the contractors' fears of high vacancies in their Wherry houses (Baldwin). From 1950 to 1966, the United States government had an estimated 200,000 family housing units constructed under the Wherry and Capehart housing programs (CBO, 1993). These houses still represent the core housing for the United States military.

Current Air Force Housing Situation

Since their construction, many of the original housing units in the Air Force inventory have undergone major and minor renovations. These renovations are not only to repair damage but also are an attempt keep the homes on par with new standard of living advances. Examples would be new kitchen and bath projects and new electrical upgrades. Budget constraints and funding

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restrictions have hampered many attempts to continue with these upgrades. The Air Force currently has a backlog of houses that need to be upgraded. In a hearing for the Military Housing and Quality of Life Infrastructure program before the Military Installations and Facilities Subcommittee of the Committee on National Security, House of Representative, second session of the 104th Congress, Chief Master Sergeant of the Air Force David J. Campanale stated, "… the average Air Force housing is 33 years old. Many of the homes require significant improvements or replacements to bring them up to contemporary standards. At current funding levels, it will take us *(Air Force)* about 24 years to eliminate this backlog" (GAO, 1996).

Some Air Force members have a choice whether to live in government provided housing or receive a tax-free Basic Allowance for Housing (BAH) that is based on the members' rank. Members who are married or have dependents generally are eligible to live in base housing. They may choose to live in base housing or live in the local community. Choices for members that are not married or have no dependents differ according to the base at which they are assigned. According to Ms. Stoll, Deputy Housing Manager, Wright-Patterson AFB OH, all E-1 through E-4 members that are unmarried or have no dependents must live in the dormitories and all E-5 through E-9 members that are unmarried or have no dependents must live off base. This is due in large to the amount of dormitory

space available at Wright-Patterson AFB. All officers at Wright-Patterson AFB that are unmarried or have no dependents are required to live in off-base housing (GAO, 1996). If members choose not to live in base housing, they will receive the BAH for their grade. Due to fiscal constraints, the Air Force is not capable of providing housing for all the members that are eligible to receive it. It is now policy to rely on the private sector to provide housing for military members and their families (GAO, 1996).

Problem Statement

Currently, approximately one-third of all military families live in government provided housing. The remaining two-thirds live in private housing in the local community. Historically, there has been high demand for base housing. The Department of Defense (DOD) notes that government housing has high occupancy rates and most installations have a waiting list of families wanting to get in. Other than this information, there is very little data available showing that military members prefer to live in base housing (GAO, 1996).

There is a need to identify the housing attribute preferences of Air Force members and whether the members have a preference for base housing over local housing in the community. According to the recommendations from the

GAO's Military Family Housing Report, there is the need to "develop information to better quantify the relationship between quality of life and family housing. The information should reflect the service members' desires and preferences for private versus government housing" (GAO, 1996). In the past the emphasis in base housing was put on establishing the minimum requirements based on the member's rank and family size. Some have argued that minimum standards should be based on physical requirements as well as the social and psychological requirements of members that are qualified to occupy the home.

> Current government efforts to establish a minimum standard for housing, for example, do not appear to successfully address anything more than minimum physical standards. Testimony in the Congressional hearing on the Military Construction Authorizations is full of phrases like 'minimum physical facilities.' This assumption implies that design research should collect the objective evidence and develop the objective methodologies necessary to re-establish minimum standards based on social and psychological behaviors as well as minimum physical considerations (Shibley 1973).

Research Objectives

Most of the research work currently being conducted in the housing area is related to cost. Headquarters United States Air Force has sought research efforts in the field of cost analysis. Most of this research is required due to the dwindling budget that the Air Force is given to operate housing. Headquarters is searching for the most productive method of spending housing dollars. Before any cost analysis can be compared to the needs and desires of the Air Force

members, the needs and desires have to be known and quantified. Are there any reasons that members would prefer to live on base instead of the local community? Is the reason cost alone? Once the needs and desires have been adequately defined, cost comparisons can then be performed to determine the best alternative solution to satisfying them. The goal of this thesis is to accomplish the following:

Research Objective #1
Develop a set of constructs that define the choices Air Force members make when choosing among available housing options.

Research Objective #2
Determine what importance Air Force members place on each of the constructs when making their housing choice.

Research Objective #3
Determine the relationships, if any, that exist between the developed constructs and final housing choice of Air Force members. Use the developed construct to predict the preferred and current housing choices made by Air Force members.

Research Objective #4
Determine the housing choice preferences by demographic characteristics (rank, dual active duty household, etc.)

Research Objective #5
Determine what type of housing Air Force members prefer to dwell in.

The results form the fulfillment of the above mentioned objectives will allow housing management to understand what decisions Air Force members consider important when choosing where they will live. Answering the research objectives will also help the Air Force understand what aspects of the housing community members consider most important.

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II.   *Literature Review*

Overview

How do families decide which home they will make their residence? What factors influence the decision? Choosing a home is a complex decision-making process. There are many aspects that must be considered and then weighed against one another. This Chapter will address the literature on the subject of housing choice. First, an explanation of human need theory will be addressed. Second, the application of human needs to housing and how a home can fulfill human needs is presented. The third section will develop the housing norms that are revealed in the body literature. Finally, there will be an in-depth look at housing norms and how there are defined.

Human Need Theory

Abraham H. Maslow theorized a hierarchy for human needs in 1943. Maslow asserted that there is a set of basic human needs that all individuals attempt to fulfill. He identified the following five basic human needs (Maslow, 1943):

Physiological Needs: Physiological needs consist of the basic needs for survival both on an individual level and a societal level (air, water, food, shelter, and sex).

Safety Needs: Safety and security that the physiological needs will continue to be met. The individual will take the steps necessary to insure that once he has achieved his physiological needs, he will be able to keep them. The individual will attempt to seek some form of security. Maslow uses the example of a desire for a savings account and insurance policies that safeguard against medical expenses, loss of work, etc.

Love Needs: This is the need for affection and a sense of belongingness toward other people. The individual will hunger for relationships with people in general or for a place in his group.

Esteem Needs: This is the individuals need or desire for a stable, firmly based high evaluation of themselves for self-respect, self-esteem and for the esteem of others

Self-Actualization Needs: This is the desire to become more and more of what one is capable of becoming. It can be thought of as living up to ones full potential in life.

Maslow explains that as the lower-order needs (physiological and safety) are fulfilled, the individual will move up the hierarchy and start fulfilling the next set of needs. The need that an individual is currently attempting to fulfill provides a basis for the next need up the hierarchy. The need hierarchy can be thought of as a pyramid type structure (see Figure 1 below). It requires that individuals have a broad solid foundation in the lower level needs before they can attain the higher level needs.
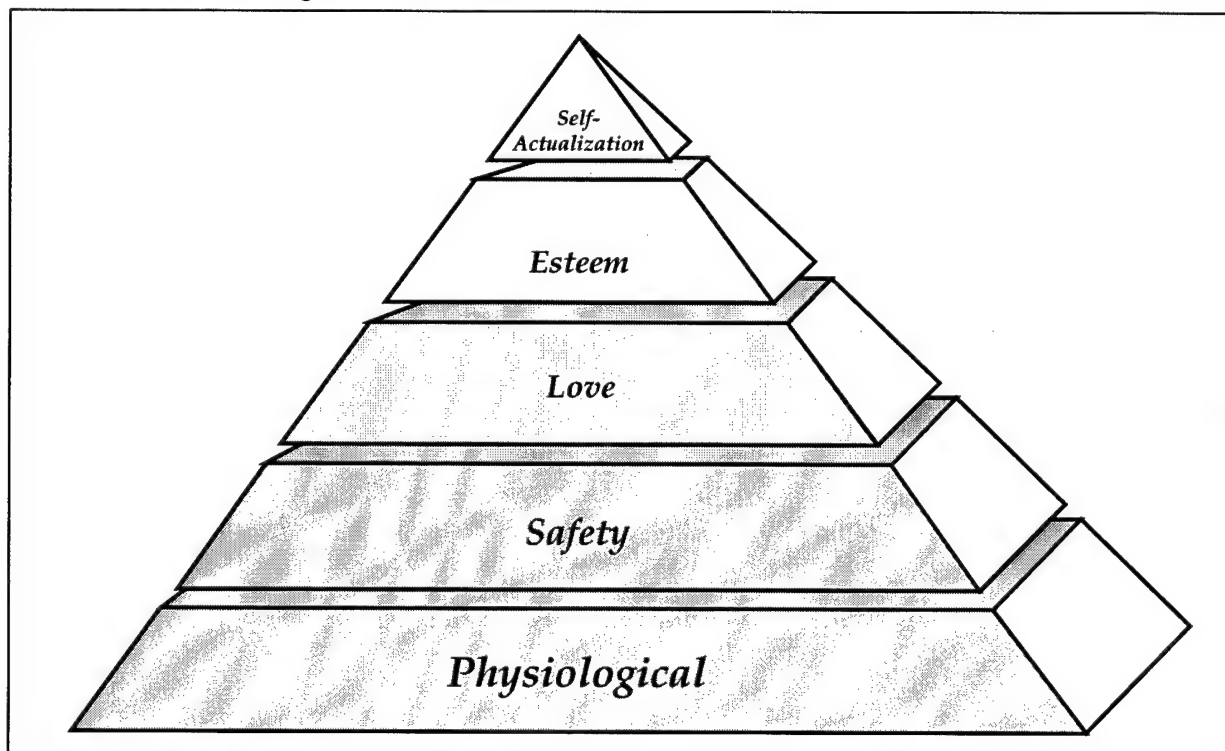
Figure 1.   Maslow's Hierarchy of Human Needs

Most individuals will tend to fulfill the most important needs first. Only "...
when a need is fairly well satisfied, the next prepotent ['higher'] need emerges, in
turn to dominate the conscious life and to serve as the center of organization if
behavior, since gratified needs are not active motivators" (Maslow, 1943). This
order of needs, according to Maslow, is applicable to most individuals. He states
that there is a very small group of individuals who may place stronger emphasis
on the higher-order needs than on the lower-order needs. "There are other,
apparently creative people in whom the drive to creativeness seems to be more
important than any other counter-determinate. Their creativeness might appear
not as self-actualization released by basic satisfaction, but in spite of lack of basic
satisfaction" (Maslow, 1943).

Application of Human Needs in Housing

Lindamood and Hanna analyze how housing helps to fulfill the five basic human
needs as outlined by Maslow:

> The theory was not developed specifically to relate to housing but
> it is useful in analyzing some of the needs served by housing. The
> theory states that lower level needs must be satisfied before higher
> level needs. It does not specify the characteristics of housing that
> meet human needs, since the exact form of housing that meets such
> needs is primarily dependent upon cultural norms and the
> individual family (Lindamood and Hanna, 1979).

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Lindamood and Hanna (1979) believe the following about how housing satisfies basic human needs:

Physiological. Housing provides shelter from the elements. It also provides a place to carry out the manifestation of the other physiological needs. Although housing varies from region to region within the United States, even the worst housing in most regions is far above the minimal requirement to provide for the physiological needs of mankind.

Security and Safety. Housing provides protection and safety from the outside world, the "home as castle concept. It is a place to keep possessions secure and provide freedom from the outside world" (Lindamood and Hanna 1979).

Social. This is the same thing that Maslow classifies as the need for love. The home is the center of any family and plays a vital role in the "socialization" of children. Housing gives families a safe place to pursue social interaction and relationships among family members as well as individuals that come into the home.

Self-Esteem. Housing plays a vital role in the self-esteem of individuals and families. In society, individuals are able to imply their self-worth to others by the type of housing they live in. The norms for housing in a community suggest what is a right or a wrong place to live. The degree to which an individual's home meets the norms of what is considered acceptable housing affects how well they may be accepted by others and their own feelings of self-worth.

Self-Actualization. An individual's housing situation plays an important part in their feeling of self-actualization. "A home that allows self expression either through the home itself or through hobbies and talents, provides what the family feels is important for a good family life and allows the achievement of group as well as individual goals" (Lindamood and Hanna 1979).

Maslow devised these human needs for most people, and he had a specific order that they were accomplished in. However, typical housing choice does not fall nicely into just one need category. The choice of a home generally fulfills most of an individual's needs simultaneously. When individuals choose a home, they are trying to balance all their needs into one single decision. They look for a home that will not only provide shelter and security but will also allow ample social interactions and provide a living environment that they are happy with.

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This multiple needs fulfillment is reflected in the way individuals look at such things as the quality of the school system where the home is located as well as crime statistics. Wealthy individuals who purchase large homes that provide far and above required space to meet their physiological needs may be attempting to fulfill their need for self-esteem and self-actualization. A home can very well provide the fulfillment of the individual's need for shelter, safety, love or social interactions, self-esteem and a sense of self-actualization.

Housing Norms

When a family is searching for a home to live in, they must sort their way through the many facets offered by a home. Each house that a consumer considers will be judged by what it has to offer and how it will help meet family needs and desires. Among these needs and desires are convenience, mobility, health, safety, security, comfort, adequate space, privacy, social interaction, aesthetics, personal values, and financial consideration (McCormick, 1970). How each individual evaluates and orders the importance of each need or desire will vary. Although each individual uniquely evaluates needs and the potential for any particular house to fulfill those needs, there are some norms of housing choice that have been identified.

"The norms governing residential behavior are space, structural type, quality, neighborhood, and location relative to other dwelling and commercial sites" (Wilson, 1979). The "American Dream" is to personally own a home. In "...the United States, the housing norms are exemplified in the ideal of the 'American Dream', a single-family home on a piece of land owned by the occupants" (Lindamood and Hanna, 1979). Most people would prefer to own their home. Owning a home gives individuals a sense of accomplishment. The westward expansion illustrates that length to which individuals will go to have a place that is theirs. The trials and hardships that were endured by the pioneers were almost overwhelming at the time, but the sense of personal drive to be on their own and self-reliant was stronger. Today, owning a home is the same basic need fulfillment. Ethnicity seems not to matter in this desire. "Members of cultural subgroups, such as Mexican-Americans, rural Appalachians, and blacks, may differ in the types of housing they have acquired, but they all aspire to middle-class American normatively defined housing" (Lindamood and Hanna, 1979). Citing Morris and Winter, Lindamood and Hanna affirm five housing norm categories. The normative categories that determine housing choice are tenure, space, structure, quality, and neighborhood and location (Lindamood and Hanna, 1979). These are the same norms cited by Wilson, with the addition of tenure. Each of these norms is described in the next section.

Norms Defined

Tenure. Tenure is whether an individual owns or rents the home in which he/she is living. Since the early days if the United States, home ownership has been highly valued and it is still the preferred tenure today. Home ownership gives the individual a sense of personal freedom (Lindamood and Hanna 1979). In a renting situation, there may be restrictions placed on the individual, such as no pets, no painting of the home, restrictive parking, etc. By owning a home, individuals gain greater freedom to express themselves and have greater control over their own actions within the home.

Space. Space refers not only to the physical size of the house itself but also the size of the lot on which it is located. If a home is too small, the occupants will be crowded.

> When too many people occupy a household, residents may
> experience unwanted social interactions, a lack of privacy, and an
> inability to move about freely in their home. Prolonged exposure
> to crowding can have adverse effects on interpersonal relations,
> psychological well being, and physical functioning (Vliet 1998).

Morris and Winter give the following guidelines for the number of bedrooms

that should be in a home to keep from overcrowding (Lindamood and Hanna

1979):

> No more than two people may share a bedroom, and a bedroom is
> needed for:
> - the parental couple (or single parent)
> - Each child aged 18 or older
> - Each pair of same sex children (with at least one child
>   between the ages of 9 and 17) whose ages differ by four
>   years or less
> - Each pair of children of any sex, both under age 9, whose
>   ages do not differ by more than four years
> - Each additional adult or couple

Lindamood and Hanna stress that if these guidelines are followed, overcrowding

will be alleviated.

Structure. Structure is the housing type. Types of structure include

single-family homes, multi-family homes such as apartments or townhouses, and

high-rise housing projects. Most American individuals aspire to the middle-class

American normatively defined housing regardless of their current housing

situation (Lindamood and Hanna 1979). Studies in England, Australia, and the

United States have indicated that a single-family, freestanding, detached house

with a yard is people's first choice for housing. This was true across all income

levels and backgrounds of the people involved in the studies. It was also shown

that high-rise apartment buildings were widely rejected as buildings that are

suitable for family living. This phenomenon is due in part to the form of the

building itself and the fact that there are no territorial rights to any land (Wedin and Nygren, 1979). Wedin and Nygren state that, based on a survey, 85 percent of individuals would prefer a single-family house to an apartment. However, two-thirds of that group were living in multi-family homes at the time they stated their preference for a single-family home.

Quality. The quality refers to how well the structure of a house was constructed. Quality also generally relates to the amenities of the house such as modernized kitchens and bathrooms, central heating systems, or plumbing.

> Many people - particularly housewives, children, and the elderly – spend more time in the home than in any other single place, and so the nature of the space is an important determinate of personal and family satisfaction. The quality of housing and who lives there becomes closely intertwined with the individual's self-perception (Bratt 1983).

The above statement agrees with how Lindamood and Hanna apply Maslow's Human Need Hierarchy to housing choice. Quality is closely intertwined with self-perception (self-esteem and self-actualization). A home can provide shelter and meet the basic needs of protection from the elements but be of low quality. As an individual moves up the hierarchy he/she will begin to acquire a home that meets the level of need he/she is trying to satisfy. A house that is constructed with high quality craftsmanship not only insures a nice comfortable home but also provides the comfort of knowing that the home will last. This also bolsters the individual's safety needs.

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Neighborhood & Location. The neighborhood and location of a house

also plays an important role in whether someone will want to live in it.

Neighborhood is the immediate area surrounding the home. The individuals

that live and work there determine the attributes of a neighborhood.

Neighborhood attributes include crime rate, pleasing landscaping, nice looking

houses, etc. Location is the physical position of the home, and is usually

considered in relation to other places such as shopping centers, work place, etc.

Location is very important in housing choice. The real estate maxim of "location,

location, location" holds true. The location of a home determines many other

features that are associated with that home. The characteristics of the

neighborhood and the location of a home have an impact on the family living

there. People look at...

> ...the relation of the housing unit to work, schools, recreational
> facilities ... the condition of other dwellings surrounding the
> housing unit, the quality of the municipal services and utilities (fire,
> police protection, garbage collection, water, and sewer) ... and the
> characteristics of the people in the area (Morris and Winter 1978).

Most all individuals are concerned that the schools in the district in which they

are thinking of living are of high quality (Morris and Winter, 1978). A 1971 study

showed that the most important aspects of a neighborhood are safety and quality

of schools (Hinshaw and Allott, 1972). The least important aspect of location,

according to the study, is the proximity of the house to one's place of

employment. The only requirement that most people have is that the home is within commuting distance. Although the daily commute to work can become quite expensive, individuals are generally more concerned with living in a quality neighborhood (Morris and Winter 1978).

Choosing a house to live in involves making a plethora of decisions and tradeoffs. There are norms that are generally followed. How these tradeoffs are made and how much they differ from the norm varies from individual to individual. Currently in the Air Force, there is no tracking system that allows managers to know what are norms for Air Force members. The only thing that is known about a member's choice is whether the member is living in base housing or in the local community. Some housing research has been conducted, but the focus has been on cost analysis and desired upgrades to the current housing units. Davis Bland's thesis (AFIT/GEM/DEM/90S-2) was concentrated on the effects that Air Force housing improvements had on personnel retention. Constantin Costen's thesis (AFIT/SLP 18-74A) dealt with Air Force housing residence's concern for privacy. Timothy Leech's thesis (AFIT/GEM/DEM/91S-5) studied the built environment of Air Force housing and its relationship to quality of life issues. Max Proctor's thesis (AFIT/LSSR 96-81) analyzed the residential satisfaction with Air Force housing. None of the studies that were found compared members living in base housing to those living in the local

community. This lack of personal choice of housing needs to be understood so

that housing management can be more proactive in response to members needs

and desires in their housing choices.

III. Methodology

Data Requirement

During the literature research, no prior studies were found that supplied data that would facilitate achieving the research objectives stated in Chapter 1. The Wright-Patterson Deputy Housing Manager (Stoll, 1998) stated that she had never seen or been involved in any type of study that has tried to determine what choices Air Force members consider when contemplating available housing options or what value members place on those choices. She also indicated that such a study would be helpful in determining what types of housing would meet the needs of Air Force personnel. The Military Family Housing Program Manager at Air Force Material Command (AFMC) (Foster, 1998) knew of no available data that could be used in this study. He too felt that a study of this kind would provide information that would be of assistance in programming housing projects. The only practical way to obtain the data is to survey directly the AF members who make the choices. The primary source of data for this study is from a questionnaire administered to the target population. The target population, survey development, survey content, and the administration plan for the survey questionnaire are discussed later in this chapter.

Survey Justification

Since no data exist, the researcher was required to use a primary data collection

method. There are a number of ways to gather primary data. For this research

effort, primary data could be gathered using a survey (mail or phone) or by

performing interviews (personal or phone). Mailed survey questionnaires were

chosen for the following reasons, as outlined by Air University (1993):

- Primary advantage is lower cost (in terms of both time and money). The questionnaire can be administered to groups of individuals at one time rather than one-to-one.
- Better samples available.
- Increased standardization. The Questionnaire insures that all individuals are asked the exact same question. Questionnaires reduce any bias that may accidentally be introduced by a telephone survey or an interview.
- Ensures greater respondent privacy. Questionnaires allow the respondent to have anonymity. Many believe that this allows the respondent to be more frank in answering the questions.

Henderson adds to this list the additional advantages of a mail survey

questionnaire (1978:29-30):

- Questionnaires allow the individual increased time to ponder the question being asked before he/she must give a response.
- The data can be more easily analyzed and interpreted than other methods.
- Questionnaires can be mailed as well as administered to groups.

For these reasons, it was decided that, in the time available to gather data, a

mailed survey questionnaire would provide the most practical results.

Target Population

The target population for this research study is the set of all military members eligible to live in base housing at Wright-Patterson AFB OH. Using the Wright-Patterson AFB Alpha Roster, the relevant population was found to consist of 4944 individuals at the time of the study. The population was determined by searching the database for all Air Force members assigned to Wright-Patterson AFB OH that were either married or had dependents, who are therefore eligible to live in base housing.

Survey Instrument Development

The survey instrument was developed using the expert consultation of two individuals. The two experts used were Elizabeth Stoll, 88 CEG Deputy Housing Manager and Bruce Foster, HQ AFMC, Military Family Housing (MFH) Program Manager. Ms. Stoll has worked in the housing area for over 18 years at various locations throughout the United States and abroad. She is responsible for oversight of base housing activities and has input into the design and construction of housing renovations and upgrades being performed at Wright-Patterson AFB. Mr. Foster has worked at HQ AFMC for over 2 years. He coordinates all housing projects within AFMC, performs housing related studies and is responsible for the development of the AFMC long-range housing plan. This plan incorporates all foreseeable future projects to be funded and completed

throughout AFMC. He also makes recommendations concerning the design of housing construction projects throughout AFMC.

Ms. Stoll and Mr. Foster were interviewed separately to ensure that personal bias was not transferred from one individual to the other. First, Ms. Stoll was interviewed. She stated that she felt housing choice for Air Force members could be divided into the following three categories:

1. Cost
2. Safety
3. Convenience

Next, Mr. Foster was interviewed. He felt that housing choice for Air Force members could be divided into the following categories:

1. Cost
2. Community
3. Convenience

Since both individuals cited the two categories of Cost and Convenience, the two separate answers were combined and presented separately to both Ms. Stoll and Mr. Foster. In a follow-up interview, they both agreed that cost, convenience, safety/security, and community best describes the areas of housing choices that Air Force members consider when deciding between housing options (see Figure 2 below).
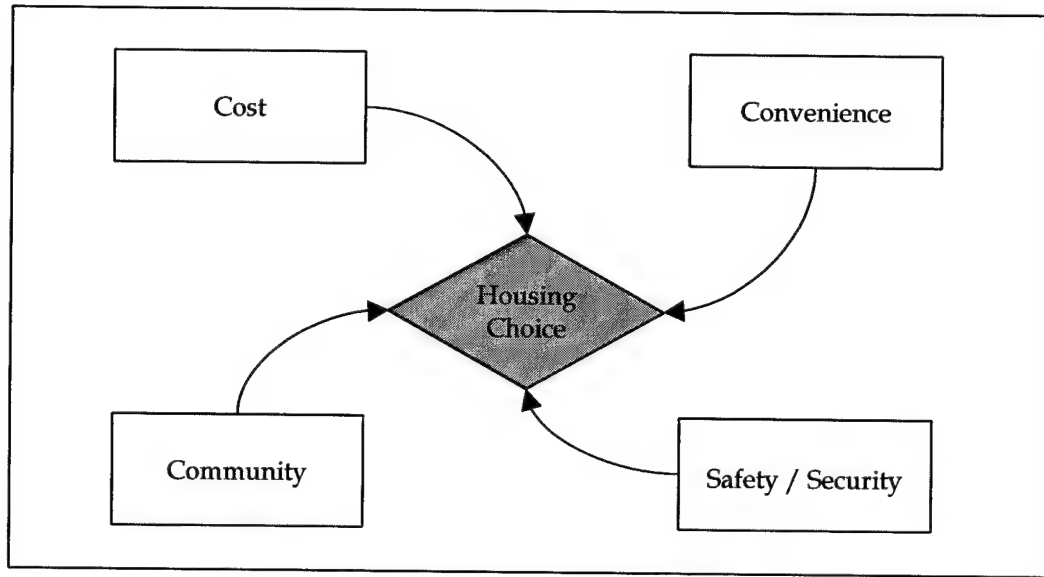
Figure 2.   Housing Choice

To ensure the four categories shown in Figure 2 were adequate, a third expert

was consulted. Willem Van Vliet has extensive experience in the housing market

throughout the world, has performed studies in the Netherlands, England, and

the United States, and is the editor of the <u>Encyclopedia of Housing</u>. He was

contacted by e-mail and asked if the four areas as listed above covered the

housing options of individuals when making a housing choice. Dr. Vliet agreed

that the housing choice could be broken into the four categories shown in Figure

2. In his reply he stated, "I tend to agree with your suppositions regarding the

rationales for living on base".

Survey Content

The survey questionnaire is an instrument used to extract data from the population under study. The survey is divided into six distinct sections. The author, his advisors, Mrs. Stoll and Mr. Foster developed the questions in each section. They were reviewed to ensure that they adequately covered to topic of the section in which they belonged. Each section is discussed in further detail below.

Section 1 – Demographics. Demographic questions are used to determine the rank, current housing situation (on base, rent or own a house, etc.), preferred housing situation, how far the drive to work is, whether the spouse works outside the home, and other information about the individual members that are participating in the study. The information from this section will allow a closer inspection of the population according to specific demographic types and will aid in determining preferences based on demographic classification. Nine of the questions in this section were for the purpose of a separate study, simultaneously conducted by a colleague (Hill, 1999).

Section 2 - Cost. Cost refers to the overall expenses associated with living in a home (rent, mortgage, utilities, etc.). Individuals are questioned as to the

overall importance of the cost when making their housing decision. The members are also asked the level to which they agree or disagree with the statement that government quarters at Wright-Patterson AFB are worth giving up their BAH. Travel cost is also explored in this section. Travel cost includes such things as the cost for gasoline, the cost of maintenance of the vehicle, etc., for travel from the residence to the workplace.

Section 3 – Convenience. Section 3 is designed to ascertain how important convenience is to Air Force members in their housing decision. Section 3 deals mainly with the convenience of the residence in relation to places or activities. The questions in this section are designed to explore the importance of convenience of the residence to the base or duty location, to medical facilities, to local shopping, to recreational facilities, to childcare, etc. Also explored is the importance of a residence that allows pets as well as the number of bedrooms and bathrooms, and available storage space.

Section 4 – Security/Safety. Section 4 contains a set of questions designed to measure the importance that is placed on the security/safety of a residence by the member's when making their housing decision. Some questions directly ask the members if they feel that government housing is more secure/safer than non-government housing options.

Section 5 – Community. The fifth section of the survey questionnaire

measures the members' community preferences. These aspects entail quality of

schools, appearance of the neighborhood in general, living in close proximity to

other military members, etc. It is in this section that the members are asked what

type of housing (multi-family, attached housing, and various types of single-

family housing) they prefer. The section ends with a series of four questions that

ask the member what a typical home that they would choose would provide.

The series of four questions is useful in understanding the types of homes that

Air Force members are interested in and can aid in future planning of housing

projects.

Section 6 – Comments. This final section allows the members to give

feedback. They are asked what is the most important attribute that they use in

choosing a housing accommodation. Members are also asked for any further

issues that the Air Force should consider when planning a housing community.

Survey Scale

The response to the questions and statements, as outlined above, were measured

using a Likert Scale score as shown in Table 1 below.

Response to a Question	Extremely Important	Important	Neutral	Unimportant	Extremely Unimportant
Response to a Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Likert Scale Score	1	2	3	4	5

Table 1. Likert Scale Scores

A Likert scale gives the respondent a chance to choose the degree of feeling about a statement or question that he/she has been asked. It allows for more that a simple agree or disagree (Renckly, 1993). The respondent is given the choice among five options.

Survey Administration

In order to be statistically accurate and precise, the sample size has to be a large enough portion of the overall population. According to the Air University Sampling and Surveying Handbook (1993), the following equation should be used to determine the required sample size:

$$n = \frac{N \times Z^2 \times 0.25}{[d^2 \times (N-1)] + (Z^2 \times 0.25)}$$

Where n is the required sample size, N is the population size (4944), Z is the number of standard deviation units of the sampling distribution corresponding to the desired confidence level (Z = 1.96 representing 95% confidence level), and

d is the precision level (5% = 0.05). According to the formula, n = 359.911; therefore at least 360 samples are required.

A printout of all 4944 individuals was obtained from Wright-Patterson personnel records. It was determined that survey questionnaires would be sent randomly to 1000 individuals in order to receive back at least the 360 required responses. Individuals were randomly selected by choosing every fifth individual on the printout. Each of the selected individuals was mailed a survey package that included a cover letter explaining the study, a survey questionnaire, a Scantron data answer sheet, and a return envelope. The cover letter indicated that a reply was needed within two weeks, with a final date of 15 November 1998. 432 surveys were returned by 31 November 1998. Of the 432, only 397 were complete and able to be used. A majority of the surveys that were discarded were sent to individuals who had been transferred. The remained were not completed. A total of 397 completed surveys were scanned into a data file on 04 December 1998. The data was read from the answer sheets by a Scantron machine that transferred the data into an ASCII data set. This data set was then analyzed using the SAS statistical software. The results are discussed in the following chapter.

Survey Respondents

The survey had a 39.7% response rate. Of the 397 respondent, 170 are enlisted

and 227 are officers (see Table 2).

Category	# of Responses	% of Total Sample
Enlisted	170	42.8
Officer	227	57.2
TOTAL	397	100.0

Table 2.   Enlisted/Officer Response

Table 3 gives a further breakdown of enlisted responses, and Table 4 gives a

further breakdown of officer responses.

Category	# of Responses	% of Enlisted	% of Total Sample
E1 – E2	2	1.2	0.5
E3 – E4	39	22.9	9.8
E5 – E6	90	52.9	22.7
E7 – E8	34	20	8.6
E9	5	2.9	1.2

Table 3.   Enlisted Response by Rank

Category	# of Responses	% of Officers	% of Total Sample
O1 – O2	40	17.6	10.1
O3	78	34.4	19.6
O4 – O5	86	37.9	21.7
O6	22	9.7	5.5
O7 – O10	1	0.4	0.3

Table 4.   Officer Response by Rank

Only 39.9% (158) of the respondents live in government-owned housing or

dormitories (see Table 5 below).

Category	# of Responses	% of Total	Cumulative %
Government-Owned Housing	155	39.1	39.1
Government-Owned Dormitory	3	0.8	39.9
Rent / Lease Non-Government Housing	82	20.7	60.6
Personally own Non-Government Housing	153	38.6	99.2
Mobile Home	3	0.8	100
TOTAL:	396	1 Missing	

Table 5.   Current Housing Category of Respondents

Construct Building

An important step in analyzing the survey data is to ensure that the participant

responses to the items are grouped in the proper categories / constructs.

Grouping of the data is done by performing a factor analysis. As outlined

earlier, the survey was divided into the four constructs of cost, convenience,

community, and safety/security. A factor analysis was performed using the

statistical software package SAS. When the factor analysis was performed, the

response data did not break into the expected four constructs. Instead, a total of

six constructs were identified (see Table 6).

	Housing Attributes	Safety	Pet Importance	Location	Military Housing Perception	Community
Item 1					X	
Item 2					X	
Item 3	------	------	------	------	------	------
Item 4				X		
Item 5						X
Item 6				X		
Item 7						X
Item 8				X		
Item 9				X		
Item 10				X		
Item 11						X
Item 12				X		
Item 13						X
Item 14	X					
Item 15	X					
Item 16	X					
Item 17			X			
Item 18			X			
Item 19		X				
Item 20		X				
Item 21		X				
Item 22		X				
Item 23	------	------	------	------	------	------
Item 24					X	
Item 25					X	
Item 26					X	
Item 27					X	
Item 28						X
Item 29					X	
Item 30						X
Item 31	X					
Item 32					X	
Item 33					X	

Table 6.   Factor Analysis

Table 6 above indicates which items belong in each of the six factors listed along

the top of the table. Items #3 and #23 were discarded because they were not part

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of any factor and did not form their own factor. This is because of inconsistent answers given by the survey participants. The items were discarded because they were not valid. Items #1 through #4 comprised the original cost construct. Items #5 through #18 comprised the original convenience construct. Items #19 through #27 comprised the original security / safety construct. Items #28 through #33 comprised the original community construct. Determining that there are 6 constructs (factors) and the items that belong in each fulfills Research Objective #1 by developing a set constructs (factors) that Air Force members use when making their housing choice.

Survey Analysis

Descriptive statistics were used to describe the importance that member's place on items within each of the six constructs, thus fulfilling Research Objective #2. This is done by using a Likert scale to measure the importance Air Force members place on each construct when making their housing choice. The lower the Likert score, the higher the importance.

A relationship between two variables is statistically defined by the correlation coefficient (Cronbach, 1970). A correlation analysis and a regression analysis were performed using SAS. Correlation coefficients range in value from –1 to 1. A correlation coefficient of –1 means that the variables are perfectly inversely

correlated while a coefficient of 1 means that the variables are perfectly correlated. To fulfill Research Objective #3, the correlation analysis is used to determine the relationships between the six developed housing constructs (Table 6), the members preferred housing choice and the members current housing choice. A regression analysis is performed to develop an equation that predicts housing choice using the six developed constructs as independent variables and the current housing choice and the preferred housing choice as the dependant variables.

Performing a correlation analysis to determine the relationships between specific demographic traits and the member's preferred and current housing choices completes research Objective #4. Tables are developed to illustrate how each demographic group answers specific question. This allows a further analysis of how each demographic population views their housing choice.

Research Objective #5 is accomplished by using the survey to directly ask the members' housing preference. Question #51 in the survey asks the members what type of housing they prefer. This will aid future Air Force design of housing areas by determining what type of housing is most appealing to the members who will ultimately occupy those areas.

IV. Results

Construct Importance & Relationships

The six housing choice constructs are given in Table 7 in order of precedence. The lower the mean Likert score, the more important the construct is to Air Force members. All the constructs have a p-value less than 0.05 which means that a relationship among the items within the constructs exists. Cronbachs Alpha represents the strength of the relationship of the items within each construct. All six of the constructs show a strong relationship among the items in each.

	Mean Likert Score	Cronbachs Coefficient Alpha
Housing Attributes	1.63	0.62
Safety	1.71	0.62
Pet Importance	2.12	0.90
Location	2.43	0.70
Community	2.62	0.85
Military Housing Perception	2.63	0.87

Table 7. Likert and Cronbach Scores

Housing Attribute Construct. The Housing Attribute construct had the lowest Likert mean score (1.63) of any construct, which means that Air Force members consider it to be the most important construct. Housing attributes consist of the amount of storage space, number of bedrooms, number of bathrooms, and neighborhood appearance.

Safety Construct. Having a Likert mean score of 1.71, the Safety construct was the second most important construct to Air Force members. Safety entails routine police patrols, a neighborhood that members feel is safe enough for their children to play outside unattended by an adult, nighttime lighting, and is safe enough to have evening activities outdoors.

Pet Importance Construct. The third lowest Likert mean score of the six constructs was pet importance (2.12). Having the third highest ranking was unexpected. It was felt that pet issues would be important to members but not important enough to make it number three. The high Cronbach coefficient alpha means that the relationship is very strong and that members gave consistent results. It was discovered that a residence that allows pets and a community where pets are allowed was important to a majority of Air Force members. The importance could be two fold. First, it could be important for members who own

pets and want a community that will accept pets. Secondly, it could be that the issue of pets is important because members do not want to live in a community that allows pets. Therefore, it would be important to those members to know which communities they should avoid because pets would be allowed.

Location Construct. The location construct ranked fourth with a mean Likert score of 2.43. The location construct dealt with issues of convenience to places outside the neighborhood such as local shopping centers, the workplace, and recreational activities and facilities. The results are consistent with the literature. The literature suggests that locational convenience is one of the first things that individuals are willing to give up in making a housing decision.

Community. The community construct measured the importance of convenience of the residence to particular neighborhood places of activity such as playyards/playgrounds, youth center, childcare services, and schools. Member's responses ranged, on average, from important to neutral as reflected by the constructs mean Likert score of 2.62.

Military Housing Perception. The military housing perception construct measures the member's feelings about housing such as the safety it provides, the standard of living, and the preference for living in close proximity to other

military personnel. It was found that Air Force member's answers ranged from neutral to unimportant, which is reflected by the lowest mean Likert score of 2.63.

Housing Choice Relationships & Preferences

To fulfill the requirement of Research Objective #3, SAS was used to perform a correlation analysis. The results are listed in Table 8 below.

Correlation	Preferred Home	Current Home	Housing Attributes	Safety	Pet Importance	Location	Military Housing Perception	Community
Preferred Home	1.00							
Current Home	.41*	1.00						
Housing Attributes	-.05	-.11*	1.00					
Safety	0.08	.20*	.20*	1.00				
Pet Importance	.004	-.02	.15	-.06	1.00			
Location	.18*	.08	.25*	.33*	-.04	1.00		
Military Housing Perception	.51*	.43*	-.007	.20* (.0001)	-.03	.22*	1.00	
Community	.06	.07	.34*	.35	-.08	.43*	.08	1.00
* (p<0.05)								

Table 8. Correlations between Housing Choices and Constructs

SAS was also used to perform two regression analysis. Both regressions were run using the six developed constructs as independent variables. In one regression, preferred home was the dependent variable and in the second regression, current home was the dependent variable. The outputs are show in Tables 9 and 10 below. Meaning and use of the regressions are discussed in Chapter V. Discussion and Conclusion.

Independent Variable	Parameter Estimate
Intercept	-.26886
Housing Attributes	-.05299
Safety	-.02944
Pet Importance	.02060
Location	.03866
Military Housing Perception	.09184
Community	.00463
R-squared = 0.2740	

Table 9. Regression Analysis for Preferred Home

Independent Variable	Parameter Estimate
Intercept	-.15394
Housing Attributes	-.11664
Safety	.09962
Pet Importance	.01426
Location	-.01645
Military Housing Perception	.07581
Community	.01448
R-squared = 0.2208	

Table 10. Regression Analysis for Current Home

Demographic Characteristics of Housing Choice

This section will compare current housing options and preferred housing options by specific demographic characteristics of the survey respondents. This will allow some insight into what each demographic category wants in a housing option. First, a general comparison of preferred housing and current housing of the members is explored. Next, an exploration of the enlisted members housing preference, current housing option, and preferred housing structure type will be

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explored. The same exploration will be performed a second time for the officer members. Finally, the current housing option of dual active duty households will be explored.

General Characteristics. It is not always possible for individuals to attain their preferred housing choice. Table 11 provides a comparison of preferred housing versus the current housing option of all members responding to the survey. Table 12provides a breakdown of the current housing choice for dual active duty households. Further detail and analysis is provided in Chapter V. Discussions and Conclusions.

Frequency % Row % Column %		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
				Preferred Housing		
Current Housing	MFH	75 19.04 49.02 66.96	0	9 2.28 5.88 27.27	69 17.51 45.10 28.16	0
	Dormitory	1 .25 33.33 .89	0	0	2 .51 66.67 .82	0
	Local Rent/lease	22 5.58 26.83 19.64	0	24 6.09 29.27 72.73	35 8.88 42.68 14.29	1 .25 1.22 25
	Own	14 3.55 9.15 12.5	0	0	139 35.28 90.85 56.73	0
	Mobile Home	0	0	0	0	3 .76 100 75

Table 11. Current vs. Preferred Housing

Frequency % Row % Column %		Current Housing				
		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
Active Duty Spouse	Yes	8 1.39 14.29 3.57	0	13 3.6 37.14 17.57	17 4.71 48.57 11.89	0
	No	135 37.4 41.41 96.43	2 .55 .61 100	61 16.9 18.72 82.43	126 34.9 38.65 88.11	2 .55 .61 100

Table 12. Dual Active Duty Household vs. Current Housing

Enlisted Characteristics. The enlisted members, as a demographic sub-group, may have different needs that would cause a specific preferred housing option to be preferred. Table 13 shows preferred housing options for enlisted members by rank. Table 14 below the choice made for current housing by enlisted members according to their rank. Tables 13 and 14 are further discussed in Chapter V. Discussions and Conclusions.

Frequency % Row % Column %		Preferred Housing				
		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
Enlisted Rank	E1 – E2	1 .59 50 2.33	0	0	1 .59 50 .92	0
	E3 – E4	15 8.88 39.47 34.88	0	7 4.14 18.42 50	14 8.28 36.84 12.84	2 1.18 5.26 66.67
	E5 – E6	21 12.43 23.33 48.84	0	6 3.55 6.67 42.86	62 36.69 68.89 56.88	1 .59 1.11 33.33
	E7 – E8	6 3.55 17.65 13.95	0	1 .59 2.94 7.14	27 15.98 79.41 24.77	0
	E9	0	0	0	5 2.96 100 4.59	0

Table 13. Enlisted Rank vs. Preferred Housing

Frequency % Row % Column %		Current Housing				
		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
Enlisted Rank	E1 – E2	2 1.18 100 2.17	0	0	0	0
	E3 – E4	24 14.12 61.54 26.09	2 1.18 5.13 66.67	7 4.12 17.95 36.84	5 2.94 12.82 9.26	1 .59 2.56 50
	E5 – E6	49 28.81 54.44 53.26	1 .59 1.11 33.33	9 5.29 10 47.37	30 17.65 33.33 55.56	1 .59 1.11 50
	E7 – E8	17 10 50 18.48	0	3 1.76 8.82 15.79	14 8.24 41.18 25.93	0
	E9	0	0	0	5 2.94 100 9.26	0

Table 14. Enlisted Rank vs. Current Housing

Officer Characteristics. Officer members, as a demographic sub-group, Is investigated to determine if there are any specific housing preferences. Table 15 below shows preferred housing options for officer members by rank. Table 16 below shows the choice made for current housing by officer members according to their rank. Further discussion and analysis is provided in Chapter V. Discussion and Conclusions.

Frequency % Row % Column %		Preferred Housing				
		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
Officer Rank	O1 – O2	17 7.52 42.5 24.64	0	5 2.21 12.5 26.32	18 7.96 45 13.14	0
	O3	23 10.18 29.87 33.33	0	9 3.98 11.69 47.37	44 19.47 57.14 32.12	1 .44 1.3 100
	O4 – O5	19 8.41 22.09 27.54	0	4 1.77 4.65 21.05	63 27.88 73.26 45.99	0
	O6	9 3.98 40.91 13.04	0	1 .44 4.55 5.26	12 5.31 54.55 8.76	0
	O7 – O10	1 .44 100 1.45	0	0	0	0

Table 15. Officer Rank vs. Preferred Housing

Frequency % Row % Column %		Current Housing				
		MFH	Dormitory	Local Rent/Lease	Own	Mobile Home
Officer Rank	O1 – O2	16 7.08 40 25.4	0	20 8.85 50 31.75	4 1.77 10 4.04	0
	O3	21 9.29 27.27 33.33	0	25 11.06 32.47 39.68	30 13.27 38.96 30.3	1 .44 1.3 100
	O4 – O5	18 7.96 20.93 28.57	0	14 6.19 16.28 22.22	54 23.89 62.79 54.55	0
	O6	7 3.1 31.82 11.11	0	4 1.77 18.18 6.35	11 4.87 50 11.11	0
	O7 – O10	1 .44 100 1.45	0	0	0	0

Table 16. Officer Rank vs. Current Housing

Preferred Housing Type. Table 17 shows the type of housing that Air Force members prefer. For further analysis of Table 17 see Chapter V. Discussions and Conclusions.

# Responses %	Multi-Family	Attached	City Single-Family	Suburban Single-Family	Rural Single-Family
Response Rate	5 1.3	17 4.3	43 10.8	265 66.8	67 16.9

Table 17. Type of Housing Preference

V. Discussion and Conclusion

Research Objective #1

The survey was designed with the perception that the following were the four

constructs that housing choice was divided into:

1. Cost
2. Convenience
3. Security/Safety
4. Community

A factor analysis on the data received from completed survey, it was discovered

that housing choice among Air Force members consisted of six constructs. The

Constructs are as follows:

1. Housing Attributes
2. Safety
3. Pet Importance
4. Location
5. Military Housing Perception
6. Community

Housing attributes deal with the house itself and the immediate area around the

house. Safety was the perception of safety that the members felt was important

to allow outdoor activities and the feeling of being able to allow children to play

outside without adult supervision and included police presence. Pet Importance

measures the importance of being able to have a family pet in a residence or a

community (such as MFH or apartment complex) that allows family pets. The

location construct means the relative importance of convenience to external

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places such as shopping, medical facilities, etc. The construct of military housing perception measures the respondent's attitudes about MFH. The final construct of community deals with convenience to activities or services that are generally associated with a neighborhood.

Research Objective #2

Housing Attributes Construct. Housing Attributes has to do with attributes associated directly with the house and the immediate area around the house. The housing attribute construct had a mean Likert score of 1.63. This means that members felt this construct was somewhere between extremely important and important. Within the construct, neighborhood appearance had the second most important Likert score with a 1.61. This means that appearance associated with any particular house is between Extremely Important and Important to Air Force members when choosing their housing. It ranks along with the amount of storage space, number of bedrooms, and the number of bathrooms that a house provides. The survey responses tend to suggest that is important for MFH to have a pleasant looking neighborhood. Housing projects that are concerned with neighborhood landscaping add considerable value to the acceptance of MFH as a viable housing option for members.

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Safety Construct. Safety was the next most important construct to members with a mean Likert score of 1.71. Members felt that safety/security of the neighborhood was between extremely important and important. The lowest mean Likert score within the construct was for the importance to feel safe enough to let children play outside without adult supervision. This is most likely due to the fact that approximately 70% of the respondents have 2 or more dependents. It was expected that the safety construct would be of importance due to the fact the safety is one of Maslow's higher order needs.

Pet Importance Construct. Pet importance has considerable impact to members when making their housing choice. The pet importance construct had a mean Likert score of 2.12. This score means that members consider being allowed to have a family pet as just slightly less than an important factor. MFH allows family pets to be kept by the members living there at no additional charge. Also, there is no size restriction for family pets in MFH. Most rental places in the local community impose a size limit, most often 20 to 25 pounds, if the members want to keep a pet. In addition to the size limit, most rental owners will charge an initial deposit, that may be non-refundable, or an additional monthly fee. Some will levy both an additional deposit and an additional monthly fee. By living in MFH, the additional cost of owning a family pet is adverted.

Location Construct. The location construct had a mean Likert score of 2.43. This means that members are closer to neutral (Likert score 3) on this aspect of housing. The literature review revealed, in the civilian population, location was one of the first aspects of housing that individuals were willing to give up for other aspects. The results here confirm the same tend to be true in the military. The lowest mean Likert score was a 2.02 for convenience to base or duty location. The convenience to the base is considered important. The most likely reason is that the trip to work is a daily activity.

Military Housing Perception Construct. The military housing perception construct had a high mean Likert score of 2.63. The highest mean Likert score in the construct was a 3.34 (between neutral and disagree), in response to the feeling that government quarters at the members present base are worth giving up the BAH. The members, who responded to the survey feel that MFH may not be worth their BAH, also felt (Likert 2.3) that it was more expensive to maintain the same standard of living in the local community as in MFH. This means that although they feel that MFH is a relatively poor value, they know that MFH is cost competitive for the same standard of living in the local community. Apparently, many are dissatisfied with the overall quality of MFH units, but may be ambivalent about paying more to live in better quarters on the economy. The

members also feel that MFH provides little added security. The member's responses ranged between agree and neutral on items dealing with the added security of living in MFH or around other military members.

Community Construct. The community construct dealt with neighborhood aspect of housing choice. The items in this construct received a mean Likert score of 2.43. Respondents felt that the convenience to both youth centers and playyards was neutral in their final housing decision. The rest of the items were around the important to neutral range. The only aspect of the community that the members place any importance (mean Likert 1.79) on was the quality of schools in the community. In the local community, the quality of schools is a big selling point of most houses.

Research Objective #3

Table 8 (page 40) shows the relationships that exist between the developed constructs and preferred and current housing. Preferred housing choice correlates to only two of the constructs, location and military housing perceptions. The current housing choice of member correlates to three constructs, housing attributes, safety and military housing perceptions.

The regression analysis rendered the parameter estimates as shown in Tables 9 and 10. Below are the equations (generated from data in Tables 9 and 10) used to predict both preferred home and current home of Air Force members.

$$\text{Prefered Home} = -0.26886 - (0.05299 \times \text{Housing Attributes}) - (0.02944 \times \text{Safety}) +$$
$$(0.02060 \times \text{Pet Importance}) + (0.03866 \times \text{Location}) +$$
$$(0.09184 \times \text{Military Housing Perception}) + (0.00463 \times \text{Community})$$

$$\text{Current Home} = -0.15394 - (0.11664 \times \text{Housing Attributes}) + (0.09962 \times \text{Safety}) +$$
$$(0.01426 \times \text{Pet Importance}) - (0.01645 \times \text{Location}) +$$
$$(0.07581 \times \text{Military Housing Perception}) + (0.01448 \times \text{Community})$$

The above equations were developed using data from the survey. Even though the data is a good representation of all Air Force members, it is cautioned that there is the strong possibility that regional factors (crime rate, housing cost, housing availability, etc.) may have some influence, specific to Wright-Patterson AFB, on how individuals make trade-offs in their housing decision. Each Air Force base resides in a different community and to try to capture all the variables for every Air Force base was not practical in this study. Therefore, it is strongly recommend that the regression analysis results be used only for the set of Air Force members assigned to Wright-Patterson AFB and not for the entire population of Air Force members. If one wishes to determine the regression equations for the entire population of Air Force members, the survey should be

administered to a random sampling of the entire population. If the regressions are needed for a particular base, the best data would result from administering the survey to a random sampling of the members assigned to the base in question.

For predicting the preferred home of a member, the regression analysis explains only 27.4% of the variance. For predicting the current home of a member, the regression analysis explains only 22.08% of the variance. Both analyses do not explain much of the variance. The regressions are an improvement over what is currently able to be predicted, as no information is currently maintained with respect to members' preferences. A few actions can be taken to increase the explained variance in each. The survey can be expanded to include the spouse. In most families, both parties make the housing decision. If the spouse attitudes were to added to the members, then a better view of the choice would be seen. With only the member's responses, only half the attitudes and perceptions are being measured. Measuring the availability of MFH at the time of the housing decision will also show a better representation of the final choice. Some members may prefer to live in MFH but were force to live in the local community due to no MFH units being available. Only a small portion (12.2%) of individuals who are renting are on the MFH waiting list with the intention of moving in if offered a house. This represents only 2.61% of all Air Force

members. Most individuals are content to remain in their present location.

Many times there is a penalty that has to be paid by the member if they desire to

break a lease so they can move into MFH if a unit becomes available. There is

also the fact that moving again is not an appealing event. Most individuals

prefer to stay put once they have settled in.

Research Objective #4

The results in Table 11 show that only 49.02% of those living in MFH actually

prefer to live there. 45.1% of all members living in MFH would rather own and

5.88% would rather rent or lease in the local community. Just over half of all

members in MFH would prefer to live elsewhere. Of those that lease or rent in

the local community, only 26.83% would rather live in MFH. This group is most

likely the group that is waiting on moving into MFH or were force to live in the

local community because MFH was full. Only 29.27% prefer to keep renting and

42.68% would prefer to buy a house rather than rent one. Buying a home can be

very risky for Air Force members. The short time on station does not allow for

much equity to be established in a home. The lack of equity can cause a

homeowner to lose money when they try to resell the home when they are

transferred to another base. Many individuals are not willing to take the risk of

losing money and therefore do not prefer to buy a home. An overwhelming

majority (90.85%) of the members who buy a house do so because that is what they prefer to do.

According to Table 12, dual active duty households much more prefer to buy or rent a home than to live in MFH. Non-dual active duty households have a much greater preference for MFH than owning or renting. The main difference in dual active duty and non-dual active duty households would most likely be that fact that a dual active duty household would lose the BAH for both members if they chose to live in MFH. By both members losing the BAH, they are paying more for the same house as a non-dual active duty household is.

Preferred housing for both enlisted and officers is about the same percentages for both demographic groups. 25.45% of enlisted members prefer MFH as compared to 30.53% of officers. There is no meaningful difference in the percentage of enlisted and officer members who prefer to rent. 65.5% of the enlisted members prefer to buy a house as compared to 60.62% of officers. There is approximately a 5% difference between officers and enlisted in the preference for living in MFH or buying a house. The high percentages of Air Force member who would prefer to buy a home supports the theory in the literature about the "American Dream". Many individuals would rather have their own place than to subject themselves

to the rules of another. Renting a home does not give the individual the freedom that ownership allows.

Even though preferred housing was relatively the same among officers and enlisted, current housing is different. Tables 14 and 16 reveal that a much greater percentage of the enlisted force live in MFH than officers. Officers, as a percentage, are much more apt to rent or buy a home in the local community. This can be due to the BAH received. Officer BAH makes them more capable to rent or buy a house.

Research Objective #5

The members were asked what type of house they prefer. This is in relation to the structure or type of housing. The most popular type of housing was a single-family house in the suburbs with large open areas (66.8%). Next came single-family house in a rural area (16.9%), single-family house in a city sub-division (10.8%), attached housing such as a duplex or townhouse (4.3%), and then multi-family housing such as apartments or condominiums (1.3%). These results can aid in the development of future Air Force housing project. A lot of the older Wherry housing was multi-family and the Capehart housing was attached. As these older houses are replaced, they should be replace with single-family or attached housing. This will make MFH a more viable choice for most Air Force members.

Suggestions for Future Research

Survey Instrument Expansion and Validation. The scope of the survey can be expanded to include the spouses of the members being surveyed. The decision of choosing a residence is more of a family decision than a single decision made by just the member. By including the spouse, more information can be gather about the decision process. The survey was only administered to members assigned to Wright-Patterson AFB OH. By increasing the sample size form a base level to an Air Force-wide level, a better view of how Air Force members make their housing decisions will be gained. For instance, members assigned to Los Angeles AFB CA may put greater emphasis on safety than members assigned to McConnell AFB KS or, in this case, Wright-Patterson AFB.

Model Development. Develop a model that can predict the housing choice that will be made by Air Force members. The model should take into account MFH availability and waiting list times.

MFH Construction Value. Develop a system that will determine what are the best projects to perform based on the preferences of the members living in MFH. Allow members to have an input into the design and construction of project that will affect their lives. Determine if the value added to the members is worth the other "costs" of doing the project.

MFH Funding Paradigm Shift. Currently MFH projects are funded by Operating and maintenance funds and by congressional appropriation. Determine if it is feasible for MFH to operate a apartment complexes. The idea is to have the BAH for the members in housing to go directly to the base for housing related projects and costs. Determine if this would provide ample funding to pay for all utilities and expenses for upkeep as well as being able to fund any new construction or modernization projects.

Military family housing fulfills a necessary and basic need of human survival. As outlined by Maslow, shelter is a basic human need. MFH is generally less expensive for the quality when compared to housing options available in the local community. People generally like to be around individuals who have common interests or backgrounds. MFH provides a support structure for the military family. Air Force members generally feel their families are safer when they live around other members. The study has shown that the decision making process of choosing a home can be categorized and measured. Understanding the process will allow the Air Force to better meet the housing expectations and needs of its' people. People are the most valuable resource available.

Appendix A: Survey Instrument

AFIT SURVEY OF
INDIVIDUAL HOUSING CHOICES
AMONG AIR FORCE MEMBERS
AT WRIGHT-PATTERSON AFB OHIO

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

Introduction

Purpose

The questionnaire is to find out information about your perceptions of Military Family Housing (MFH) and the type of accommodations that you value when looking for a place to live. This information is being compiled to aid in a thesis that is exploring the factors that are important to Air Force members in their housing decisions. We also want to determine attributes that individuals are looking for in a house so that the Air Force can better meet the needs of its members.

Routine Use

Individual responses will never be reported and ONLY members of the research team will be permitted to access the raw data. All answer sheets are anonymous. The information gained in this survey will be used in an Air Force Institute of Technology thesis. The thesis will determine the factors that are important to Air Force members when they are making housing decisions. It will also indicate the relationships between those factors and the final housing decision that is made by members. This information is vital to successful future Air Force housing development.

Participation

Participation is voluntary. No adverse action will be taken against any member who does no participate in this survey or who does not complete any part of this survey.

Thank you for your time and effort in completing this survey and providing vital information to this thesis research.

1Lt. Michael J. Johnson
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Air Force Institute of Technology
Wright-Patterson AFB OH 45433
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Instructions

This questionnaire contains 57 items. The survey is divided into the following parts:

> Part 1. Demographics
> Part 2. Cost
> Part 3. Convenience
> Part 4. Security / Safety
> Part 5. Community

Please use the machine-scored response form provided to answer all 57 items. You are not required to fill in your name or social security number on the response sheet. This will ensure that you remain anonymous.

Answer sheets will be machine read. Please use a No. 2 pencil to record your answers on the response sheet and adhere to the following guidelines:

> 1. Make heavy dark marks.
> 2. Fill in the entire circle on the response form.

Incorrect Markings

     Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

     Ⓞ Ⓞ Ⓞ Ⓞ Ⓞ

Correct Marking

     Ⓐ ● Ⓒ Ⓓ Ⓔ

> 3. If you make a mistake, Erase Completely.
> 4. Do not make any stray marks on the response sheet.

Again, thank you for your participation.

DEMOGRAPHICS

This section is for purposes of establishing demographic backgrounds of those participating in the study. Indicate the response on the answer sheet which best applies to you or your situation.

Put your 5-digit postal code in the "student number" block as follows.

1. If you are enlisted, which best describes your current rank? (If not enlisted, leave blank)
   A. E1 – E2
   B. E3 – E4
   C. E5 – E6
   D. E7 – E8
   E. E9

2. If you are an officer, which best describes your current rank? (If not an officer, leave blank)
   A. O1 – O2
   B. O3
   C. O4 – O5
   D. O6
   E. O7 – O10

3. Where are you currently living?
   A. U.S. Government-owned family housing
   B. U.S. Government-owned dormitory
   C. Rent / lease non-government housing
   D. Own or are buying non-government housing
   E. Mobile home

4. Where do you prefer to live?
   A. U.S. Government-owned family housing
   B. U.S. Government-owned dormitory
   C. Rent / lease non-government housing
   D. Personally owned non-government housing
   E. Mobile home

5. Are you currently on the base housing waiting list with the intention of moving into a government-owned house if one is offered to you?
   A. Yes
   B. No

6. Sex
   A. Male
   B. Female

7. Are you currently qualified to live in government-owned housing?
   A. Yes
   B. No

8. How many dependents live with you?
   A. 0 or 1
   B. 2
   C. 3
   D. 4
   E. 5 or more

9. What is your marital status?
   A. Married, living with spouse
   B. Married, not living with spouse *(Skip to item #15)*
   C. Divorced *(Skip to item #15)*
   D. Widowed *(Skip to item #15)*
   E. Single – never been married *(Skip to item #15)*

10. Does your spouse work outside the residence for pay?
    A. Yes, part-time
    B. Yes, full-time
    C. No

11. Is your spouse active duty military?
    A. Yes
    B. No

12. What is the educational level of your spouse?
    A. Less than high school
    B. High school diploma or GED
    C. Some college
    D. 4-year college degree
    E. Masters degree or more

13. How many <u>miles</u> does your spouse drive to work?
    A. 0 – 5 miles
    B. 6 – 10 miles
    C. 11 –15 miles
    D. 16 – 20 miles
    E. 21 – more miles

14. How much <u>time</u> does it take for your spouse to get to work?
    A. 0 – 10 minutes
    B. 11 – 20 minutes
    C. 21 – 30 minutes
    D. 31 – 40 minutes
    E. 41 – more minutes

15. How many government-owned houses / dormitories have you resided in since joining the military?
    A. 0
    B. 1
    C. 2
    D. 3
    E. 4 or more

16. How many <u>miles</u> do you drive to get to work?
    A. 0 – 5 miles
    B. 6 – 10 miles
    C. 11 –15 miles
    D. 16 – 20 miles
    E. 21 – more miles

17. How much <u>time</u> does it take you to get to work?
    A. 0 – 10 minutes
    B. 11 – 20 minutes
    C. 21 – 30 minutes
    D. 31 – 40 minutes
    E. 41 – more minutes

COST

In this section, you will be asked a series of statements or questions. Think about the housing decisions you have made and indicate the answer which best represents you.

18. Government quarters at my present base are worth giving up my BAQ.
    A. Strongly Agree
    B. Agree
    C. Undecided
    D. Disagree
    E. Strongly Disagree

19. It is more expensive to maintain the same standard of living off base than in government housing.
    A. Strongly Agree
    B. Agree
    C. Undecided
    D. Disagree
    E. Strongly Disagree

20. How important is the overall cost (rent, mortgage, utilities, etc.) in your housing decision?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

21. How important is travel cost (gas, maintenance, etc.) to and from work in you housing decision?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

CONVENIENCE

In this section, you will be asked about the value you place on the convenience to particular places or activities. On the answer sheet, indicate the relative importance or unimportance of each item in relation to your housing decisions.

22. Convenience of residence to playyards / playgrounds for children
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

23. Convenience of residence to base or duty station
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

24. Convenience of residence to youth activity centers
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

25. Convenience of residence to medical facility / clinic
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

26. Convenience of residence to recreational facilities (gym, basketball court, swimming pool, etc.)
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

27. Convenience of residence to local shopping centers
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

28. Convenience of residence to child care services and facilities
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

29. Convenience of residence to religious facilities
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

30. Convenience of residence to local schools
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

31. How important is storage space in your housing decision?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

32. How important is the number of bedrooms in your housing decision?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

33. How important is the number of bathrooms in your housing decision?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

34. How important is a residence that allows family pets (dog, cat, etc.) in your housing decision?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

35. I prefer to live in communities that allow pets (dog, cat, etc.).
   A. Strongly Agree
   B. Agree
   C. Neutral
   D. Disagree
   E. Strongly Disagree

SECURITY/SAFETY

In this section, you will be asked a series of questions or statements that pertain to your security or safety. On the answer sheet, please indicate the response which best represents your housing decisions.

36. In choosing a house, how important to you are routine neighborhood police patrols
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

37. How important is it for you to feel safe/secure enough to allow your children to play outside without adult supervision (assuming you have children)?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

38. How important is it for you to feel safe/secure enough to have evening neighborhood activities?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

39. How important is nighttime lighting in your choice of housing location?
    A. Extremely Important
    B. Important
    C. Neutral
    D. Unimportant
    E. Extremely Unimportant

40. How satisfied are you with the police protection in your current neighborhood?
    A. Extremely Satisfied
    B. Satisfied
    C. Neutral
    D. Unsatisfied
    E. Extremely Unsatisfied

41. I feel safer/more secure living among other military members than living in a non-military community.
    A. Strongly Agree
    B. Agree
    C. Undecided
    D. Disagree
    E. Strongly Disagree

42. I feel that my spouse/family will be safer/more secure when I am TDY if we live around other military members.
    A. Strongly Agree
    B. Agree
    C. Undecided
    D. Disagree
    E. Strongly Disagree

43. I feel that government quarters provide better safety/security than living in non-government quarters.
   A. Strongly Agree
   B. Agree
   C. Undecided
   D. Disagree
   E. Strongly Disagree

44. I would rather live in government housing behind the base fence line than government housing outside the base fence line.
   A. Strongly Agree
   B. Agree
   C. Undecided
   D. Disagree
   E. Strongly Disagree

COMMUNITY

In this section, you will be asked a series of questions or statements that pertain to your community aspects of housing. On the answer sheet, please indicate the responses that best represent your housing decisions.

45. How important is the number of nearby playyards / playgrounds
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

46. How important is living near other military members in your housing location decision?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

47. How important is the quality of the schools in the community when you make your housing decision?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

48. How important is neighborhood appearance (pleasing, attractive, landscaping, etc.) when making your housing decision?
   A. Extremely Important
   B. Important
   C. Neutral
   D. Unimportant
   E. Extremely Unimportant

49. I enjoy living near other military members because we have something in common.
   A. Strongly Agree
   B. Agree
   C. Undecided
   D. Disagree
   E. Strongly Disagree

50. I don't enjoy living near other military members because I want to get away from my work when I am at home.
   A. Strongly Agree
   B. Agree
   C. Undecided
   D. Disagree
   E. Strongly Disagree

51. What type of housing do you prefer?
   A. Multi-family housing (apartments, condos, etc.)
   B. Attached housing (duplex, townhouse, etc.)
   C. Single family housing in city sub-division
   D. Single family housing in suburban setting with large open spaces
   E. Single family housing in rural area

52. A home I would typically choose would provide:
   A. 1 bedroom
   B. 2 bedrooms
   C. 3 bedrooms
   D. 4 bedrooms
   E. 5 or more bedrooms

53. A home I would typically choose would provide:
    A. 1 bathroom
    B. 1.5 bathrooms
    C. 2 bathrooms
    D. 2.5 bathrooms
    E. 3 or more bathrooms

54. A home I would typically choose would provide:
    A. Uncovered parking
    B. A carport
    C. A 1-car garage
    D. A 2-car garage
    E. A 3-car garage

55. A home I would typically choose would provide:
    A. No private yard
    B. A small, unfenced yard
    C. A small, fenced yard
    D. A large, unfenced yard
    E. A large, fenced yard

Please answer the following in the "comments" section of the answer sheet.

56. The single most important housing attribute that I use in choosing my housing accommodation is:

57. In addition to the issues that I have indicated on this questionnaire, I think that the Air Force should consider the following aspects in planning our housing communities:

Appendix B: Frequency & Contingency Table

```
options linesize=100;
data demo;
infile housing2 missover;
input @61 zipcode 61-65 @70 enlrank 70 offrank 71 curhome 72 prefhome
73
       waitlist 74 sex 75 qualify 76 numdep 77 marstat 78 spousewk 79
       adspouse 80 edspouse 81 sdrmiles 82 sdrtime 83 numgovhs 84
       drivmile 85 drivtime 86
       cost1 87 cost2 88 cost3 89 cost4 90
       exconv1 91 exconv2 92 exconv3 93 exconv4 94 exconv5 95
       exconv6 96 exconv7 97 exconv8 98 exconv9 99
       intconv1 100 intconv2 101 intconv3 102
       intconv4 103 intconv5 104
       safe1 105 safe2 106 safe3 107 safe4 108 safe5 109
       safe6 110 safe7 111 safe8 112 safe9 113 comm1 114 comm2 115
       comm3 116 comm4 117 comm5 118 comm6 119 typepref 120 typbedrm 121
       typbath 122 typpark 123 typyard 124;

if enlrank ne . and offrank ne . then delete;

cost1=cost1+1; cost2=cost2+1; cost3=cost3+1; cost4=cost4+1;

exconv1=exconv1+1; exconv2=exconv2+1; exconv3=exconv3+1;
exconv4=exconv4+1;
exconv5=exconv5+1; exconv6=exconv6+1; exconv7=exconv7+1;
exconv8=exconv8+1;
exconv9=exconv9+1;

intconv1=intconv1+1; intconv2=intconv2+1; intconv3=intconv3+1;
intconv4=intconv4+1; intconv5=intconv5+1;

safe1=safe1+1; safe2=safe2+1; safe3=safe3+1;
safe4=safe4+1; safe5=safe5+1; safe6=safe6+1;
safe7=safe7+1; safe8=safe8+1; safe9=safe9+1;

comm1=comm1+1; comm2=comm2+1; comm3=comm3+1;
comm4=comm4+1; comm5=comm5+1; comm6=5-comm6;

group5=cost1+cost2+safe6+safe7+safe8+safe9+comm2+comm5+comm6;
group6=exconv1+exconv3+exconv7+exconv9+comm1+comm3;
group4=cost4+exconv2+exconv4+exconv5+exconv6+exconv8;
group3=intconv4+intconv5;
group1=intconv1+intconv2+intconv3+comm4;
group2=safe1+safe2+safe3+safe4;

proc freq;
       Tables curhome*prefhome adspouse*curhome
       enlrank*curhome offrank*curhome
       enlrank*prefhome offrank*prefhome
       enlrank*typepref offrank*typepref;


proc freq;
```

TABLE OF CURHOME BY PREFHOME

CURHOME   PREFHOME

Frequency|
Percent |
Row Pct |
Col Pct |

Cells show: Frequency / Percent / Row Pct / Col Pct

CURHOME	0	1	2	3	4	Total
0	75 / 19.04 / 49.02 / 66.96	9 / 2.28 / 5.88 / 27.27	69 / 17.51 / 45.10 / 28.16	0 / 0.00 / 0.00 / 0.00	0 / 0.00 / 0.00 / 0.00	153 / 38.83
1	1 / 0.25 / 33.33 / 0.89	0 / 0.00 / 0.00 / 0.00	2 / 0.51 / 66.67 / 0.82	0 / 0.00 / 0.00 / 0.00	0 / 0.00 / 0.00 / 0.00	3 / 0.76
2	22 / 5.58 / 26.83 / 19.64	24 / 6.09 / 29.27 / 72.73	35 / 8.88 / 42.68 / 14.29	1 / 0.25 / 1.22 / 25.00	0 / 0.00 / 0.00 / 0.00	82 / 20.81
3	14 / 3.55 / 9.15 / 12.50	0 / 0.00 / 0.00 / 0.00	139 / 35.28 / 90.85 / 56.73	0 / 0.00 / 0.00 / 0.00	0 / 0.00 / 0.00 / 0.00	153 / 38.83
4	0 / 0.00 / 0.00 / 0.00	0 / 0.00 / 0.00 / 0.00	0 / 0.00 / 0.00 / 0.00	3 / 0.76 / 100.00 / 75.00	0 / 0.00 / 0.00 / 0.00	3 / 0.76
Total	112 / 28.43	33 / 8.38	245 / 62.18	4 / 1.02	0 / 0.00	394 / 100.00

79

Frequency Missing = 3

TABLE OF ADSPOUSE BY CURHOME

ADSPOUSE   CURHOME

Frequency Percent Row Pct Col Pct	0	1	2	3	4	Total
0	5 1.39 14.29 3.57	0 0.00 0.00 0.00	13 3.60 37.14 17.57	17 4.71 48.57 11.89	0 0.00 0.00 0.00	35 9.70
1	135 37.40 41.54 96.43	2 0.55 0.62 100.00	61 16.90 18.77 82.43	125 34.63 38.46 87.41	2 0.55 0.62 100.00	325 90.03
2	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.28 100.00 0.70	0 0.00 0.00 0.00	1 0.28
Total	140 38.78	2 0.55	74 20.50	143 39.61	2 0.55	361 100.00

Frequency Missing = 36

80

TABLE OF ENLRANK BY CURHOME

ENLRANK   CURHOME

Frequency Percent Row Pct Col Pct	0	1	2	3	4	Total
0	2 1.18 100.00 2.17	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.18
1	24 14.12 61.54 26.09	2 1.18 5.13 66.67	7 4.12 17.95 36.84	5 2.94 12.82 9.26	1 0.59 2.56 50.00	39 22.94
2	49 28.82 54.44 53.26	1 0.59 1.11 33.33	9 5.29 10.00 47.37	30 17.65 33.33 55.56	1 0.59 1.11 50.00	90 52.94
3	17 10.00 50.00 18.48	0 0.00 0.00 0.00	3 1.76 8.82 15.79	14 8.24 41.18 25.93	0 0.00 0.00 0.00	34 20.00
4	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	5 2.94 100.00 9.26	0 0.00 0.00 0.00	5 2.94
Total	92 54.12	3 1.76	19 11.18	54 31.76	2 1.18	170 100.00

Frequency Missing = 227

81

TABLE OF OFFRANK BY CURHOME

CURHOME

OFFRANK Frequency| Percent | Row Pct | Col Pct |	0|	1|	2|	3|	4|	Total
0	16 7.08 40.00 25.40	0 0.00 0.00 .	20 8.85 50.00 31.75	4 1.77 10.00 4.04	0 0.00 0.00 0.00	40 17.70
1	21 9.29 27.27 33.33	0 0.00 0.00 .	25 11.06 32.47 39.68	30 13.27 38.96 30.30	1 0.44 1.30 100.00	77 34.07
2	18 7.96 20.93 28.57	0 0.00 0.00 .	14 6.19 16.28 22.22	54 23.89 62.79 54.55	0 0.00 0.00 0.00	86 38.05
3	7 3.10 31.82 11.11	0 0.00 0.00 .	4 1.77 18.18 6.35	11 4.87 50.00 11.11	0 0.00 0.00 0.00	22 9.73
4	1 0.44 100.00 1.59	0 0.00 0.00 .	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.44
Total	63 27.88	0 0.00	63 27.88	99 43.81	1 0.44	226 100.00

Frequency Missing = 171

82

TABLE OF ENLRANK BY PREFHOME

PREFHOME

ENLRANK		0	2	3	4	Total
Frequency						
Percent						
Row Pct						
Col Pct						
0	Frequency	1	0	1	0	2
	Percent	0.59	0.00	0.59	0.00	1.18
	Row Pct	50.00	0.00	50.00	0.00	
	Col Pct	2.33	0.00	0.92	0.00	
1	Frequency	15	7	14	2	38
	Percent	8.88	4.14	8.28	1.18	22.49
	Row Pct	39.47	18.42	36.84	5.26	
	Col Pct	34.88	50.00	12.84	66.67	
2	Frequency	21	6	62	1	90
	Percent	12.43	3.55	36.69	0.59	53.25
	Row Pct	23.33	6.67	68.89	1.11	
	Col Pct	48.84	42.86	56.88	33.33	
3	Frequency	6	1	27	0	34
	Percent	3.55	0.59	15.98	0.00	20.12
	Row Pct	17.65	2.94	79.41	0.00	
	Col Pct	13.95	7.14	24.77	0.00	
4	Frequency	0	0	5	0	5
	Percent	0.00	0.00	2.96	0.00	2.96
	Row Pct	0.00	0.00	100.00	0.00	
	Col Pct	0.00	0.00	4.59	0.00	
Total	Frequency	43	14	109	3	169
	Percent	25.44	8.28	64.50	1.78	100.00

Frequency Missing = 228

TABLE OF OFFRANK BY PREFHOME

PREFHOME

Legend: Frequency / Percent / Row Pct / Col Pct

OFFRANK		0	1	2	3	4	Total
0	Frequency	17	5	18	0	0	40
	Percent	7.52	2.21	7.96	0.00	0.00	17.70
	Row Pct	42.50	12.50	45.00	0.00	0.00	
	Col Pct	24.64	26.32	13.14	0.00	0.00	
1	Frequency	23	9	44	1	0	77
	Percent	10.18	3.98	19.47	0.44	0.00	34.07
	Row Pct	29.87	11.69	57.14	1.30	0.00	
	Col Pct	33.33	47.37	32.12	100.00	0.00	
2	Frequency	19	4	63	0	0	86
	Percent	8.41	1.77	27.88	0.00	0.00	38.05
	Row Pct	22.09	4.65	73.26	0.00	0.00	
	Col Pct	27.54	21.05	45.99	0.00	0.00	
3	Frequency	9	1	12	0	0	22
	Percent	3.98	0.44	5.31	0.00	0.00	9.73
	Row Pct	40.91	4.55	54.55	0.00	0.00	
	Col Pct	13.04	5.26	8.76	0.00	0.00	
4	Frequency	1	0	0	0	0	1
	Percent	0.44	0.00	0.00	0.00	0.00	0.44
	Row Pct	100.00	0.00	0.00	0.00	0.00	
	Col Pct	1.45	0.00	0.00	0.00	0.00	
Total	Frequency	69	19	137	1	0	226
	Percent	30.53	8.41	60.62	0.44	0.44	100.00

Frequency Missing = 171

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TABLE OF ENLRANK BY TYPEPREF

ENLRANK   TYPEPREF

Frequency Percent Row Pct Col Pct	0	1	2	3	4	Total
0	0 0.00 0.00 0.00	1 0.59 50.00 8.33	0 0.00 0.00 0.00	1 0.59 50.00 1.03	0 0.00 0.00 0.00	2 1.18
1	3 1.76 7.69 75.00	6 3.53 15.38 50.00	5 2.94 12.82 25.00	18 10.59 46.15 18.56	7 4.12 17.95 18.92	39 22.94
2	0 0.00 0.00 0.00	2 1.18 2.22 16.67	14 8.24 15.56 70.00	55 32.35 61.11 56.70	19 11.18 21.11 51.35	90 52.94
3	1 0.59 2.94 25.00	3 1.76 8.82 25.00	1 0.59 2.94 5.00	20 11.76 58.82 20.62	9 5.29 26.47 24.32	34 20.00
4	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 1.76 60.00 3.09	2 1.18 40.00 5.41	5 2.94
Total	4 2.35	12 7.06	20 11.76	97 57.06	37 21.76	170 100.00

Frequency Missing = 227

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                    TABLE OF OFFRANK BY TYPEPREF

OFFRANK      TYPEPREF
Frequency|
Percent  |
Row Pct  |
Col Pct  |      0|      1|      2|      3|      4|  Total
---------+-------+-------+-------+-------+-------+
    0    |     1 |     4 |     2 |    28 |     5 |    40
         |  0.44 |  1.76 |  0.88 | 12.33 |  2.20 | 17.62
         |  2.50 | 10.00 |  5.00 | 70.00 | 12.50 |
         |100.00 | 80.00 |  8.70 | 16.67 | 16.67 |
---------+-------+-------+-------+-------+-------+
    1    |     0 |     1 |    12 |    58 |     7 |    78
         |  0.00 |  0.44 |  5.29 | 25.55 |  3.08 | 34.36
         |  0.00 |  1.28 | 15.38 | 74.36 |  8.97 |
         |  0.00 | 20.00 | 52.17 | 34.52 | 23.33 |
---------+-------+-------+-------+-------+-------+
    2    |     0 |     0 |     8 |    62 |    16 |    86
         |  0.00 |  0.00 |  3.52 | 27.31 |  7.05 | 37.89
         |  0.00 |  0.00 |  9.30 | 72.09 | 18.60 |
         |  0.00 |  0.00 | 34.78 | 36.90 | 53.33 |
---------+-------+-------+-------+-------+-------+
    3    |     0 |     0 |     0 |    20 |     2 |    22
         |  0.00 |  0.00 |  0.00 |  8.81 |  0.88 |  9.69
         |  0.00 |  0.00 |  0.00 | 90.91 |  9.09 |
         |  0.00 |  0.00 |  0.00 | 11.90 |  6.67 |
---------+-------+-------+-------+-------+-------+
    4    |     0 |     0 |     1 |     0 |     0 |     1
         |  0.00 |  0.00 |  0.44 |  0.00 |  0.00 |  0.44
         |  0.00 |  0.00 |100.00 |  0.00 |  0.00 |
         |  0.00 |  0.00 |  4.35 |  0.00 |  0.00 |
---------+-------+-------+-------+-------+-------+
Total          1       5      23     168      30     227
            0.44    2.20   10.13   74.01   13.22  100.00

Frequency Missing = 170
```

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ZIPCODE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	0.8	2	0.8
2345	1	0.4	3	1.2
4428	1	0.4	4	1.6
12345	1	0.4	5	2.0
36484	1	0.4	6	2.4
40121	1	0.4	7	2.8
43454	1	0.4	8	3.2
45044	1	0.4	9	3.6
45066	2	0.8	11	4.4
45123	1	0.4	12	4.8
45305	4	1.6	16	6.5
45323	1	0.4	17	6.9
45324	14	5.6	31	12.5
45342	2	0.8	33	13.3
45344	3	1.2	36	14.5
45359	1	0.4	37	14.9
45385	2	0.8	39	15.7
45387	1	0.4	40	16.1
45410	4	1.6	44	17.7
45415	1	0.4	45	18.1
45419	1	0.4	46	18.5
45420	2	0.8	48	19.4
45424	31	12.5	79	31.9
45429	4	1.6	83	33.5
45430	4	1.6	87	35.1
45431	53	21.4	140	56.5
45432	8	3.2	148	59.7
45433	67	27.0	215	86.7
45434	6	2.4	221	89.1
45440	8	3.2	229	92.3
45458	8	3.2	237	95.6
45459	4	1.6	241	97.2
45502	5	2.0	246	99.2
45505	1	0.4	247	99.6

54524   1   0.4   248   100.0

Frequency Missing = 149

ENLRANK	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	2	1.2	2	1.2
1	39	22.9	41	24.1
2	90	52.9	131	77.1
3	34	20.0	165	97.1
4	5	2.9	170	100.0

Frequency Missing = 227

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OFFRANK	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	40	17.6	40	17.6
1	78	34.4	118	52.0
2	86	37.9	204	89.9
3	22	9.7	226	99.6
4	1	0.4	227	100.0

Frequency Missing = 170

88

CURHOME	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	155	39.1	155	39.1
1	3	0.8	158	39.9
2	82	20.7	240	60.6
3	153	38.6	393	99.2
4	3	0.8	396	100.0

Frequency Missing = 1

PREFHOME	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	112	28.4	112	28.4
2	33	8.4	145	36.7
3	246	62.3	391	99.0
4	4	1.0	395	100.0

Frequency Missing = 2

WAITLIST	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	11	2.9	11	2.9
1	372	96.9	383	99.7
4	1	0.3	384	100.0

Frequency Missing = 13

89

SEX	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	313	78.8	313	78.8
1	84	21.2	397	100.0

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QUALIFY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	395	100.0	395	100.0

Frequency Missing = 2

NUMDEP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	119	30.0	119	30.0
1	81	20.4	200	50.4
2	124	31.2	324	81.6
3	52	13.1	376	94.7
4	21	5.3	397	100.0

MARSTAT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	362	91.2	362	91.2
1	7	1.8	369	92.9
2	20	5.0	389	98.0
3	1	0.3	390	98.2
4	7	1.8	397	100.0

SPOUSEWK	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	71	19.5	71	19.5
1	169	46.3	240	65.8
2	122	33.4	362	99.2
3	3	0.8	365	100.0

Frequency Missing = 32

ADSPOUSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	35	9.7	35	9.7
1	326	90.1	361	99.7
2	1	0.3	362	100.0

Frequency Missing = 35

EDSPOUSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	4	1.1	4	1.1
1	42	11.6	46	12.7
2	152	42.1	198	54.8
3	115	31.9	313	86.7
4	48	13.3	361	100.0

Frequency Missing = 36

SDRMILES	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	128	41.6	128	41.6
1	79	25.6	207	67.2
2	47	15.3	254	82.5
3	30	9.7	284	92.2
4	24	7.8	308	100.0

Frequency Missing = 89

SDRTIME	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	121	40.1	121	40.1
1	104	34.4	225	74.5
2	57	18.9	282	93.4
3	12	4.0	294	97.4
4	8	2.6	302	100.0

Frequency Missing = 95

NUMGOVHS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	50	12.6	50	12.6
1	85	21.4	135	34.0
2	77	19.4	212	53.4
3	58	14.6	270	68.0
4	127	32.0	397	100.0

DRIVMILE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	134	33.8	134	33.8
1	138	34.8	272	68.7
2	68	17.2	340	85.9
3	32	8.1	372	93.9
4	24	6.1	396	100.0

Frequency Missing = 1

DRIVTIME	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	122	30.9	122	30.9
1	190	48.1	312	79.0
2	65	16.5	377	95.4
3	11	2.8	388	98.2
4	7	1.8	395	100.0

Frequency Missing = 2

COST1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	42	10.6	42	10.6
2	82	20.7	124	31.3
3	73	18.4	197	49.7
4	104	26.3	301	76.0
5	95	24.0	396	100.0

Frequency Missing = 1

93

COST2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	116	29.2	116	29.2
2	142	35.8	258	65.0
3	63	15.9	321	80.9
4	59	14.9	380	95.7
5	17	4.3	397	100.0

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COST3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	173	43.6	173	43.6
2	179	45.1	352	88.7
3	22	5.5	374	94.2
4	20	5.0	394	99.2
5	3	0.8	397	100.0

COST4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	32	8.1	32	8.1
2	197	49.6	229	57.7
3	93	23.4	322	81.1
4	69	17.4	391	98.5
5	6	1.5	397	100.0

EXCONV1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	52	13.1	52	13.1
2	154	38.8	206	51.9
3	93	23.4	299	75.3
4	68	17.1	367	92.4
5	30	7.6	397	100.0

EXCONV2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	82	20.7	82	20.7
2	244	61.5	326	82.1
3	51	12.8	377	95.0
4	19	4.8	396	99.7
5	1	0.3	397	100.0

EXCONV3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	22	5.5	22	5.5
2	110	27.7	132	33.2
3	137	34.5	269	67.8
4	92	23.2	361	90.9
5	36	9.1	397	100.0

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EXCONV4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	56	14.1	56	14.1
2	207	52.1	263	66.2
3	96	24.2	359	90.4
4	31	7.8	390	98.2
5	7	1.8	397	100.0

EXCONV5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	26	6.5	26	6.5
2	175	44.1	201	50.6
3	129	32.5	330	83.1
4	53	13.4	383	96.5
5	14	3.5	397	100.0

EXCONV6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	40	10.1	40	10.1
2	219	55.2	259	65.2
3	105	26.4	364	91.7
4	30	7.6	394	99.2
5	3	0.8	397	100.0

EXCONV7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	39	9.8	39	9.8
2	88	22.2	127	32.0
3	109	27.5	236	59.4
4	104	26.2	340	85.6
5	57	14.4	397	100.0

EXCONV8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	29	7.3	29	7.3
2	134	33.8	163	41.1
3	148	37.3	311	78.3
4	69	17.4	380	95.7
5	17	4.3	397	100.0

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EXCONV9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	94	23.7	94	23.7
2	165	41.6	259	65.2
3	59	14.9	318	80.1
4	53	13.4	371	93.5
5	26	6.5	397	100.0

INTCONV1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	160	40.3	160	40.3
2	205	51.6	365	91.9
3	23	5.8	388	97.7
4	8	2.0	396	99.7
5	1	0.3	397	100.0

INTCONV2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	243	61.2	243	61.2
2	148	37.3	391	98.5
3	3	0.8	394	99.2
4	2	0.5	396	99.7
5	1	0.3	397	100.0

INTCONV3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	138	34.8	138	34.8
2	222	55.9	360	90.7
3	32	8.1	392	98.7
4	5	1.3	397	100.0

INTCONV4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	158	39.8	158	39.8
2	103	25.9	261	65.7
3	61	15.4	322	81.1
4	41	10.3	363	91.4
5	34	8.6	397	100.0

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INTCONV5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	165	41.6	165	41.6
2	119	30.0	284	71.5
3	69	17.4	353	88.9
4	24	6.0	377	95.0
5	20	5.0	397	100.0

SAFE1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	124	31.2	124	31.2
2	212	53.4	336	84.6
3	47	11.8	383	96.5
4	14	3.5	397	100.0

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SAFE2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	288	73.5	288	73.5
2	76	19.4	364	92.9
3	25	6.4	389	99.2
4	2	0.5	391	99.7
5	1	0.3	392	100.0

Frequency Missing = 5

SAFE3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	203	51.1	203	51.1
2	155	39.0	358	90.2
3	31	7.8	389	98.0
4	8	2.0	397	100.0

SAFE4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	100	25.2	100	25.2
2	209	52.6	309	77.8
3	74	18.6	383	96.5
4	13	3.3	396	99.7
5	1	0.3	397	100.0

SAFE5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	116	29.2	116	29.2
2	225	56.7	341	85.9
3	38	9.6	379	95.5
4	18	4.5	397	100.0

SAFE6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	94	23.7	94	23.7
2	133	33.5	227	57.2
3	83	20.9	310	78.1
4	73	18.4	383	96.5
5	14	3.5	397	100.0

SAFE7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	117	29.5	117	29.5
2	139	35.0	256	64.5
3	66	16.6	322	81.1
4	63	15.9	385	97.0
5	12	3.0	397	100.0

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SAFE8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	90	22.7	90	22.7
2	152	38.3	242	61.0
3	74	18.6	316	79.6
4	64	16.1	380	95.7
5	17	4.3	397	100.0

SAFE9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	150	37.8	150	37.8
2	103	25.9	253	63.7
3	75	18.9	328	82.6
4	46	11.6	374	94.2
5	23	5.8	397	100.0

COMM1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	27	6.8	27	6.8
2	161	40.6	188	47.4
3	114	28.7	302	76.1
4	68	17.1	370	93.2
5	27	6.8	397	100.0

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COMM2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	20	5.0	20	5.0
2	89	22.4	109	27.5
3	136	34.3	245	61.7
4	107	27.0	352	88.7
5	45	11.3	397	100.0

COMM3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	224	56.4	224	56.4
2	90	22.7	314	79.1
3	41	10.3	355	89.4
4	24	6.0	379	95.5
5	18	4.5	397	100.0

COMM4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	170	42.8	170	42.8
2	211	53.1	381	96.0
3	13	3.3	394	99.2
4	3	0.8	397	100.0

103

COMM5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	41	10.4	41	10.4
2	153	38.6	194	49.0
3	104	26.3	298	75.3
4	68	17.2	366	92.4
5	30	7.6	396	100.0

Frequency Missing = 1

COMM6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	41	10.4	41	10.4
2	161	40.7	202	51.0
3	92	23.2	294	74.2
4	66	16.7	360	90.9
5	36	9.1	396	100.0

Frequency Missing = 1

TYPEPREF	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	5	1.3	5	1.3
1	17	4.3	22	5.5
2	43	10.8	65	16.4
3	265	66.8	330	83.1
4	67	16.9	397	100.0

TYPBEDRM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	14	3.5	14	3.5
2	160	40.3	174	43.8
3	186	46.9	360	90.7
4	37	9.3	397	100.0

TYPBATH	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	2	0.5	2	0.5
1	29	7.3	31	7.8
2	157	39.5	188	47.4
3	172	43.3	360	90.7
4	37	9.3	397	100.0

TYPPARK	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	4	1.0	4	1.0
1	9	2.3	13	3.3
2	49	12.3	62	15.6
3	303	76.3	365	91.9
4	32	8.1	397	100.0

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TYPYARD	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	1	0.3	1	0.3
1	14	3.6	15	3.8
2	65	16.5	80	20.3
3	95	24.1	175	44.4
4	219	55.6	394	100.0

Frequency Missing = 3

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GROUP5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
9	1	0.3	1	0.3
10	6	1.5	7	1.8
11	8	2.0	15	3.8
12	7	1.8	22	5.6
13	10	2.5	32	8.1
14	5	1.3	37	9.4
15	22	5.6	59	15.0
16	10	2.5	69	17.5
17	17	4.3	86	21.8
18	17	4.3	103	26.1
19	25	6.3	128	32.5
20	17	4.3	145	36.8
21	28	7.1	173	43.9
22	13	3.3	186	47.2
23	19	4.8	205	52.0
24	19	4.8	224	56.9
25	19	4.8	243	61.7
26	11	2.8	254	64.5
27	15	3.8	269	68.3
28	27	6.9	296	75.1
29	17	4.3	313	79.4
30	13	3.3	326	82.7
31	6	1.5	332	84.3
32	13	3.3	345	87.6
33	8	2.0	353	89.6
34	9	2.3	362	91.9
35	5	1.3	367	93.1
36	8	2.0	375	95.2
37	5	1.3	380	96.4
38	8	2.0	388	98.5
39	1	0.3	389	98.7
40	2	0.5	391	99.2
42	1	0.3	392	99.5
45	2	0.5	394	100.0

Frequency Missing = 3

GROUP6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	6	1.5	6	1.5
7	2	0.5	8	2.0
8	4	1.0	12	3.0
9	12	3.0	24	6.0
10	19	4.8	43	10.8
11	35	8.8	78	19.6
12	33	8.3	111	28.0
13	46	11.6	157	39.5
14	28	7.1	185	46.6
15	33	8.3	218	54.9
16	35	8.8	253	63.7
17	22	5.5	275	69.3
18	27	6.8	302	76.1
19	20	5.0	322	81.1
20	10	2.5	332	83.6
21	10	2.5	342	86.1
22	8	2.0	350	88.2
23	10	2.5	360	90.7
24	10	2.5	370	93.2
25	4	1.0	374	94.2
26	4	1.0	378	95.2
27	3	0.8	381	96.0
28	3	0.8	384	96.7
29	2	0.5	386	97.2
30	11	2.8	397	100.0

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GROUP4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	0.8	3	0.8
7	2	0.5	5	1.3
8	5	1.3	10	2.5
9	12	3.0	22	5.5
10	13	3.3	35	8.8
11	29	7.3	64	16.1
12	44	11.1	108	27.2
13	51	12.8	159	40.1
14	41	10.3	200	50.4
15	42	10.6	242	61.0
16	44	11.1	286	72.0
17	29	7.3	315	79.3
18	30	7.6	345	86.9
19	24	6.0	369	92.9
20	11	2.8	380	95.7
21	9	2.3	389	98.0
22	4	1.0	393	99.0
23	3	0.8	396	99.7
24	1	0.3	397	100.0

GROUP3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	136	34.3	136	34.3
3	48	12.1	184	46.3
4	72	18.1	256	64.5
5	30	7.6	286	72.0
6	32	8.1	318	80.1
7	26	6.5	344	86.6
8	29	7.3	373	94.0
9	13	3.3	386	97.2
10	11	2.8	397	100.0

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GROUP1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	46	11.6	46	11.6
5	87	21.9	133	33.5
6	77	19.4	210	52.9
7	71	17.9	281	70.8
8	71	17.9	352	88.7
9	26	6.5	378	95.2
10	14	3.5	392	98.7
11	2	0.5	394	99.2
12	3	0.8	397	100.0

GROUP2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	53	13.5	53	13.5
5	49	12.5	102	26.0
6	84	21.4	186	47.4
7	69	17.6	255	65.1
8	64	16.3	319	81.4
9	34	8.7	353	90.1
10	23	5.9	376	95.9
11	6	1.5	382	97.4
12	7	1.8	389	99.2
13	2	0.5	391	99.7
14	1	0.3	392	100.0

Frequency Missing = 5

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Appendix C: Correlation Analysis

```
options linesize=100;
data corr;
infile housing2 missover;
input @61 zipcode 61-65 @70 enlrank 70 offrank 71 curhome 72 prefhome 73
      waitlist 74 sex 75 qualify 76 numdep 77 marstat 78 spousewk 79
      adspouse 80 edspouse 81 sdrmiles 82 sdrtime 83 numgovhs 84
      drivmile 85 drivtime 86
      cost1 87 cost2 88 cost3 89 cost4 90
      exconv1 91 exconv2 92 exconv3 93 exconv4 94 exconv5 95
      exconv6 96 exconv7 97 exconv8 98 exconv9 99
      intconv1 100 intconv2 101 intconv3 102
      intconv4 103 intconv5 104
      safe1 105 safe2 106 safe3 107 safe4 108 safe5 109
      safe6 110 safe7 111 safe8 112 safe9 113
      comm1 114 comm2 115 comm3 116 comm4 117 comm5 118 comm6 119
      typepref 120 typbedrm 121 typbath 122 typpark 123 typyard 124;

cost1=cost1+1; cost2=cost2+1; cost3=cost3+1; cost4=cost4+1;

exconv1=exconv1+1; exconv2=exconv2+1; exconv3=exconv3+1;
exconv4=exconv4+1;
exconv5=exconv5+1; exconv6=exconv6+1; exconv7=exconv7+1;
exconv8=exconv8+1;
exconv9=exconv9+1;

intconv1=intconv1+1; intconv2=intconv2+1; intconv3=intconv3+1;
intconv4=intconv4+1; intconv5=intconv5+1;

safe1=safe1+1; safe2=safe2+1; safe3=safe3+1;
safe4=safe4+1; safe5=safe5+1; safe6=safe6+1;
safe7=safe7+1; safe8=safe8+1; safe9=safe9+1;

comm1=comm1+1; comm2=comm2+1; comm3=comm3+1;
comm4=comm4+1; comm5=comm5+1; comm6=5-comm6;


group5=cost1+cost2+safe6+safe7+safe8+safe9+comm2+comm5+comm6;
group6=exconv1+exconv3+exconv7+exconv9+comm1+comm3;
group4=cost4+exconv2+exconv4+exconv5+exconv6+exconv8;
group3=intconv4+intconv5;
group1=intconv1+intconv2+intconv3+comm4;
group2=safe1+safe2+safe3+safe4;

proc corr alpha;
      var cost1 cost2 safe6 safe7 safe8 safe9 comm2 comm5 comm6;
      title 'Construct Reliability test for GROUP5/Military Housing
Perception items.';

proc corr alpha;
      var exconv1 exconv3 exconv7 exconv9 comm1 comm3;
      title 'Construct Reliability test for GROUP6/Community items.';

proc corr alpha;
      var cost4 exconv2 exconv4 exconv5 exconv6 exconv8;
```

```
          title 'Construct Reliability test for GROUP4/Location items.';

proc corr alpha;
      var intconv4 intconv5;
      title 'Construct Reliability test for GROUP3/Pet Importance items.';

proc corr alpha;
      var intconv1 intconv2 intconv3 comm4;
      title 'Construct Reliability test for GROUP1/Housing Attributes
items.';

proc corr alpha;
      var safe1 safe2 safe3 safe4;
      title ' Construct reliability test for GROUP2/Safety items.';

proc corr alpha;
      var prefhome curhome group1 group2 group3 group4 group5 group6;
```

Appendix D: Factor Analysis

```
options linesize=80;
data factor;
infile housing2 missover;
input @61 zipcode 61-65 @70 enlrank 70 offrank 71 curhome 72 prefhome 73
      waitlist 74 sex 75 qualify 76 numdep 77 marstat 78 spousewk 79
      adspouse 80 edspouse 81 sdrmiles 82 sdrtime 83 numgovhs 84
      drivmile 85 drivtime 86
      cost1 87 cost2 88 cost3 89 cost4 90
      exconv1 91 exconv2 92 exconv3 93 exconv4 94 exconv5 95
      exconv6 96 exconv7 97 exconv8 98 exconv9 99
      intconv1 100 intconv2 101 intconv3 102 intconv4 103 intconv5 104
      safe1 105 safe2 106 safe3 107 safe4 108 safe5 109
      safe6 110 safe7 111 safe8 112 safe9 113
      comm1 114 comm2 115 comm3 116 comm4 117 comm5 118 comm6 119
      typepref 120 typbedrm 121 typbath 122 typpark 123 typyard 124;



cost1=cost1+1; cost2=cost2+1; cost3=cost3+1; cost4=cost4+1;

exconv1=exconv1+1; exconv2=exconv2+1; exconv3=exconv3+1;
exconv4=exconv4+1;
exconv5=exconv5+1; exconv6=exconv6+1; exconv7=exconv7+1;
exconv8=exconv8+1;
exconv9=exconv9+1;

intconv1=intconv1+1; intconv2=intconv2+1; intconv3=intconv3+1;
intconv4=intconv4+1; intconv5=intconv5+1;


safe1=safe1+1; safe2=safe2+1; safe3=safe3+1;
safe4=safe4+1; safe5=safe5+1; safe6=safe6+1;
safe7=safe7+1; safe8=safe8+1; safe9=safe9+1;

comm1=comm1+1; comm2=comm2+1; comm3=comm3+1;
comm4=comm4+1; comm5=comm5+1; comm6=5-comm6;




cost=cost1+cost2+cost3+cost4;
exconv=exconv1+exconv2+exconv3+exconv4+exconv5+exconv6+exconv7+exconv8+
exconv9;
intconv=intconv1+intconv2+intconv3+intconv4+intconv5;
safe=safe1+safe2+safe3+safe4+safe5+safe6+safe7+safe8+safe9;
comm=comm1+comm2+comm3+comm4+comm5+comm6;


proc factor method=uls n=5 rotate=promax round;

    var cost1 cost2 cost3 cost4 exconv1 exconv2 exconv3 exconv4 exconv5
      exconv6 exconv7 exconv8 exconv9 intconv1 intconv2 intconv3 intconv4
        intconv5 safe1 safe2 safe3 safe4 safe5 safe6 safe7 safe8 safe9
      comm1 comm2 comm3 comm4 comm5 comm6;
run;
```

```
proc factor method=uls n=6 rotate=promax round;

    var cost1 cost2 cost3 cost4 exconv1 exconv2 exconv3 exconv4 exconv5
      exconv6 exconv7 exconv8 exconv9 intconv1 intconv2 intconv3 intconv4
        intconv5 safe1 safe2 safe3 safe4 safe5 safe6 safe7 safe8 safe9
      comm1 comm2 comm3 comm4 comm5 comm6;
run;
proc factor method=uls n=7 rotate=promax round;

    var cost1 cost2 cost3 cost4 exconv1 exconv2 exconv3 exconv4 exconv5
      exconv6 exconv7 exconv8 exconv9 intconv1 intconv2 intconv3 intconv4
        intconv5 safe1 safe2 safe3 safe4 safe5 safe6 safe7 safe8 safe9
      comm1 comm2 comm3 comm4 comm5 comm6;
run;
```

Appendix E: Regression Analysis

```
options linesize=100;
data regpref;
infile housing2 missover;
input @61 zipcode 61-65 @70 enlrank 70 offrank 71 curhome 72 prefhome 73
      waitlist 74 sex 75 qualify 76 numdep 77 marstat 78 spousewk 79
      adspouse 80 edspouse 81 sdrmiles 82 sdrtime 83 numgovhs 84
      drivmile 85 drivtime 86
      cost1 87 cost2 88 cost3 89 cost4 90
      exconv1 91 exconv2 92 exconv3 93 exconv4 94 exconv5 95
      exconv6 96 exconv7 97 exconv8 98 exconv9 99
      intconv1 100 intconv2 101 intconv3 102
      intconv4 103 intconv5 104
      safe1 105 safe2 106 safe3 107 safe4 108 safe5 109
      safe6 110 safe7 111 safe8 112 safe9 113
      comm1 114 comm2 115 comm3 116 comm4 117 comm5 118 comm6 119
      typepref 120 typbedrm 121 typbath 122 typpark 123 typyard 124;



cost1=cost1+1; cost2=cost2+1; cost3=cost3+1; cost4=cost4+1;

exconv1=exconv1+1; exconv2=exconv2+1; exconv3=exconv3+1;
exconv4=exconv4+1;
exconv5=exconv5+1; exconv6=exconv6+1; exconv7=exconv7+1;
exconv8=exconv8+1;
exconv9=exconv9+1;

intconv1=intconv1+1; intconv2=intconv2+1; intconv3=intconv3+1;
intconv4=intconv4+1; intconv5=intconv5+1;

safe1=safe1+1; safe2=safe2+1; safe3=safe3+1;
safe4=safe4+1; safe5=safe5+1; safe6=safe6+1;
safe7=safe7+1; safe8=safe8+1; safe9=safe9+1;

comm1=comm1+1; comm2=comm2+1; comm3=comm3+1;
comm4=comm4+1; comm5=comm5+1; comm6=5-comm6;



group5=cost1+cost2+safe6+safe7+safe8+safe9+comm2+comm5+comm6;
group6=exconv1+exconv3+exconv7+exconv9+comm1+comm3;
group4=cost4+exconv2+exconv4+exconv5+exconv6+exconv8;
group3=intconv4+intconv5;
group1=intconv1+intconv2+intconv3+comm4;
group2=safe1+safe2+safe3+safe4;


proc reg;
      model prefhome=group1 group2 group3 group4 group5 group6;
      title 'model: regression for prefered home as dependent var.';

proc reg;
      model curhome=group1 group2 group3 group4 group5 group6;
      title 'model: regression for current home as dependent var.';
```

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model: regression for prefered home as dependent var.

Model: MODEL1
Dependent Variable: PREFHOME

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	195.38331	32.56389	24.719	0.0001
Error	393	517.72669	1.31737		
C Total	399	713.11000			

Root MSE	1.14777	R-square	0.2740
Dep Mean	2.08500	Adj R-sq	0.2629
C.V.	55.04881		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.268864	0.36657934	-0.733	0.4637
GROUP1	1	-0.052985	0.03608770	-1.468	0.1428
GROUP2	1	-0.029444	0.03196611	-0.921	0.3576
GROUP3	1	0.020598	0.02494250	0.826	0.4094
GROUP4	1	0.038661	0.02011929	1.922	0.0554
GROUP5	1	0.091839	0.00821269	11.183	0.0001
GROUP6	1	0.004627	0.01340105	0.345	0.7301

model: regression for current home as dependent var.

02:07 Monday, January 25, 1999

Model: MODEL1
Dependent Variable: CURHOME

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	164.08991	27.34832	18.603	0.0001
Error	394	579.22181	1.47011		
C Total	400	743.31172			

Root MSE	1.21248	R-square	0.2208
Dep Mean	1.61097	Adj R-sq	0.2089
C.V.	75.26381		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-0.153944	0.38693125	-0.398	0.6909
GROUP1	1	-0.116644	0.03795571	-3.073	0.0023
GROUP2	1	0.099622	0.03374265	2.952	0.0033
GROUP3	1	0.014263	0.02634361	0.541	0.5885
GROUP4	1	-0.016448	0.02133034	-0.771	0.4411
GROUP5	1	0.075812	0.00867822	8.736	0.0001
GROUP6	1	0.014483	0.01410655	1.027	0.3052

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Vita

Captain Michael Joseph Johnson was born in Portsmouth, Virginia on 02 June 1972. He graduated from Tabernacle Baptist High School, Virginia Beach, Virginia and entered the Virginia Military Institute in Lexington, Virginia. He graduated from the Virginia Military Institute in 1994 with a Bachelor of Science degree in Mechanical Engineering, and earned a reserve commission as a Second Lieutenant in the United States Air Force.

Captain Johnson entered active duty in February 1995 at McConnell Air Force Base, Kansas, as a mechanical engineer assigned to the 22d Civil Engineer Squadron. While at McConnell Air Force Base, he served as a project manager and then as the Chief of SABER. He was then selected to attend the Graduated Engineering and Environmental Management program at the Air Force Institute of Technology, Wright-Patterson Air Force Base. He chose to follow the Engineering Management track. After earning a Masters of Science degree in Engineering and Environmental Management, he was assigned to the 43d Civil Engineer Squadron at Pope Air Force Base, North Carolina.

Captain Johnson is married to Tina R. Johnson of Chesapeake, Virginia. They have one daughter, Kathleen Joan.

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13. ABSTRACT *(Maximum 200 words)*

Air Force members have three different housing choices: live in MFH, rent in the local community, or buy a house in the local community. A set of six constructs (Housing Attributes, Safety, Pet Importance, Location, Military Housing Perception, and Community) that encompass members' considerations is developed and analyzed. The data was extracted from a survey that was specifically design to illicit the relative importance of each construct during the housing decision making process. Each construct was measured using a Likert scale score. Statistical analysis was performed to determine the overall Likert mean score for each construct. Using the Likert mean scores from each construct, a regression analysis was performed to determine a predictive model for Air Force member's housing choice (actual housing choice, or preferred housing choice). Not all members are living in their preferred housing choice. Almost 50% of members living in MFH prefer to live in the local community. Knowing the importance that Air Force members place on each construct will aid the Air Force in the future design of MFH projects. The ability to predict members' choices will give the Air Force a forward looking approach to MFH by allowing them to respond to future needs base on the predictive model.

14. SUBJECT TERMS
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